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CONSTRUCTION

ROLE OF CAPITAL CONSTRUCTION IN SOCIALIST REPRODUCTION IN 11TH FIVE-YEAR PLAN

Moscow PLANOVYE KHOZYAYSTVO in Russian No 3, Mar 82 (signed to press 19 Feb 82) pp 20-30

[Article by USSR Gosplan department head N. Baryshnikov and chief specialist G. Galakhov: "Capital Construction, the Decisive Sector in Socialist Reproduction"]

[Text] The new demands being made by the present stage of national economic development determine the long-term processes of socialist reproduction improvement, growth in the well-being of the people and ensuring the security of our country. Socialist reproduction is a unified, continuous process, implemented on a planned basis, of updating and expanding collectivized assets, reproducing manpower and developing productive relations to further raise the material and cultural standards of living of the Soviet people. Increasing the potential of the national economy in the form of the aggregate of interconnected fixed assets and production capacities is an important link in reproduction.

By virtue of the fact that the product derived in this particular process emerges in two forms, cost and physical-substantive, the indicated forms are also related to capital investments. Such capital investments are also, on the one hand, monetary expenditures of funds on creating fixed assets and production capacities and, on the other, reflections of specific types of resources needed to update and increase production capacities.

As the scope of reproduction grows, the importance of coordinating these two aspects and, correspondingly, the balance of the capital investments plan increases. In view of the fact that extensive growth factors are being exhausted at the present stage and in view of the relatively limited resources, the development of and regional change in the country's productive forces will be possible only on the basis of intensifying fixed assets reproduction and improving the efficiency of social production and capital investments.

The demographic situation which has evolved and the ever-growing importance of social factors in development determine the distribution of a decreasing increment in labor resources basically into the nonproductive sphere. Under such conditions, production volume in the basic branches of the national economy must be increased practically entirely through labor productivity growth by making better use of the production apparatus and increasing the availability of capital to workers.

Given the enormous reserves of mineral raw material, fuel and timber available in the country, there will arise a relative scarcity of these resources as the demands

of the economy grow. Inasmuch as the extractive and raw-material branches are the most capital-intensive, it becomes more economical from a national economic point of view to allocate additional resources for changing over to a materials- and fuel-saving path of development than to ensure an increasing increment in raw and other materials, fuel and energy. The factors complicating economic development include both the constantly increasing expenditures on mastering the East and North and unavoidable expenditures on environmental protection measures, which will exceed 10 billion rubles in the 11th Five-Year Plan.

The production capacities currently being created will be operating in the 21st Century, largely predetermining the efficiency of operation of branches of the national economy and industry. This will require additional resources on improving social and sanitation-hygiene working and living conditions. Economizing will become an essential condition of fixed assets production and reproduction development.

As one of the most important links in expanded reproduction, capital construction is using approximately one-fifth of the national income and one-tenth of those employed in the national economy in the early 1980's. In spite of the systematic reduction in the specific expenditures of material resources, their total consumption volume has reached significant amounts. Cement expenditures in all construction-installation work are 84.5 million tons, metal -- 18 million tons and lumber -- 45 million cubic meters. On a capital construction scale, saving materials and components is estimated to be 1.5 billion rubles a year, equivalent to the construction of about 60,000 apartments.

At the present stage, given the changeover to an intensive path, the objective dependence of all aspects of economic development on capital construction is having a decisive impact. In a speech at the November (1981) CPSU Central Committee Plenum, L. I. Brezhnev cited capital construction as one of the decisive sectors of the five-year plan, inasmuch as improving capital investment effectiveness, accelerating construction and improving construction quality will facilitate implementation of party and government resolutions on perfecting the economic mechanism. Today, the dependence of economic development on the scope, structure and effectiveness of capital investments has become more manifest.

In the 10th Five-Year Plan, USSR Central Statistical Administration calculations show, the start-up of fixed assets and capacities was a decisive factor in increasing industrial production. In 1980, approximately four-fifths of the total increment in industrial output volume, as compared with the volume in the base year, was obtained as a result of putting fixed assets into operation.

In actualizing the task of increasing the country's production potential on a new technical basis, the task of building housing and municipal- and personal-services projects and sociocultural projects, capital construction actively influences the distribution of productive forces and shaping the means of labor system as the basis of the technological system of social production, as well as accelerating technical progress and, in the end, increasing the well-being of the people and shaping the most important national economic proportions and structure of the national economy.

When distributing capital investments, consideration is given to the operative economic laws of socialism. Its basic law, expressing the goal of production, includes as a means of attaining it, along with other factors, the orientation of socialist reproduction and influences the link between social production structures and demands

and, in so doing, shapes the basic proportions of the national economy. In accordance with the latter, under the influence of the law of planned and proportional development of the national economy, capital investments must be distributed in a co-ordinated manner among the spheres of production and branches of the national economy and industry so as to ensure social reproduction and maintain a stable ratio of production to demand.

As the scope of production broadens and in view of the dynamicity of economic processes, the action of the law of planned and proportional development on the physical-substantive aspect of capital investments intensifies in the period of developed socialism. But at the same time, the influence of the law of value remains strong, and underestimating the value aspect when planning capital investments can lead to a reduction in the final impact. Strict, consistent observance of the demands of the law of unswerving growth in labor productivity is manifested as the sole intelligent principle of management, one which opens up additional sources for saving live and embodied labor. Consideration of these laws in planning practice enables us to properly establish priorities in distributing capital investments to develop the branches and economic regions of the country, ensuring progressive changes in national economic, interbranch and intra-branch proportions.

Under present conditions, following the immutable principle of economic development -- attaining the best results in the interests of society with the least expenditures -- has a number of features. A type of expanded socialist reproduction in which the rates of growth in capital investments outstripped the rates of growth in national income was previously characteristic of the Soviet economy. In the 11th Five-Year Plan, changing the economy over to an intensive path of development has required outstripping growth in national income as compared with capital investment growth. The increasing role of intensive factors in increasing absolute production increments must be achieved with an appreciable reduction in the increments in numbers of people employed in the production sphere and with capital investment limits.

In the current five-year period, we are faced with ensuring 90 percent of the increment in national income and the entire increment in construction-installation work through a rise in the productivity of social labor. Faster growth in putting fixed assets into operation as compared with capital investment growth is to be achieved by concentrating capital investments, accelerating construction schedules and, in so doing, reducing the amount of unfinished construction. State capital investments will increase 11.2 percent as compared with the 10th Five-Year Plan, to 618.4 billion rubles, while the start-up of fixed assets will be increased by 21 percent, to 627 billion rubles.

The importance of qualitative improvement in means of production thanks to the primary factor of intensification, scientific and technical progress, will increase in socialist reproduction in the five-year plan. Thus, we need to ensure a 1.5- to 1.6-fold increase in the productivity of new machine tools and automated machine-tool lines during the five-year plan. In 1982 alone, about 24 billion rubles will be used to meet the needs of the various branches of science ensuring technical progress, that is, 5.2 percent more than in 1981, and given national income growth over 1981 of three percent. We anticipate accelerating the rates of equipment updating approximately 1.5-fold.

The changing proportions in national income use in favor of the consumption fund is based on outstripping rates of growth in Group B industrial output as compared with

Group A, on expanding the assortment and improving the quality of objects of consumption. The central problem of the five-year period will be to ensure rapid rates of agricultural production as the basis of the food program the country is embarking on.

The 11th Five-Year Plan also notes as a most important problem that of improving the proportions of social development. Thus, given installation of 530 million square meters of total housing space, the priority regions in the housing construction program will be the country's eastern regions and rural areas. Some 30 million square meters more housing will be built for rural workers than was built in the 10th Five-Year Plan, and in regions of the Far East and Siberia -- 9.4 million square meters more.

The system of interbranch and intrabranch ties which has evolved increases the responsibility of capital construction for the harmonious operation of the national economic links, for creating conditions ensuring the efficient operation of the leading branches of industry and the national economy.

The specifics of the reproduction process in the 1980's will include a different orientation of change in fixed assets and increment in amount of labor resources. As a result, a disproportion will occur in the growth of new jobs when new production capacities are created and the amount of labor resources, especially of highly skilled personnel. We will need to link the creation of production capacities and the increment in skilled manpower more closely to one another, especially by economic region. In this connection, it will be necessary to restore the undeservedly forgotten practice of planning jobs at the national economic and branch levels at both existing and newly-built enterprises. The importance of budget calculations of agreement between the total number of jobs and the number of workers and employees will increase.

By the start of the 1980's, the value of the most important portion of the country's national wealth, fixed assets, stood at 1.7 trillion rubles. and the value of the active portion, fixed production assets, exceeded 1.1 trillion rubles. As their scale has increased, reviewing the fundamental approach to the major overhaul of buildings and structures has become a factor of not inconsiderable importance. This question has already been raised on the pages of this magazine (PLANOVYE KHOZYAYSTVO, No 4, 1981, pp 125-126). In resolving it, we need to achieve a maximum linkage, both in time and in direction, of major overhaul and retooling of existing enterprises. This will enable us both to obtain additional financial resources and to reorient the capacities of contractor construction organizations, inasmuch as the nationwide average proportion of major overhaul being done under general contract approximates 20 percent.

The scope of the current level of production and resources consumption has a substantial effect on the volumes of capital investments being used to maintain existing capacities in the raw material and fuel branches, in which switching over to utilizing deposits ensures retention of the level of production achieved, and on those being used to put new capacities into operation. Expenditures on these purposes comprised nearly one-fourth of all capital investments in coal, lumbering, paper and wood processing branches in the 10th Five-Year Plan and about one-tenth in building materials industry. Compensation of withdrawn means of labor in extractive branches on a fundamentally new technical basis through new construction will become an intensive form of fixed assets reproduction.

For the national economy as a whole, the proportion of all capital investments expended on supporting capacities at existing enterprises increased 0.6 point during the 10th Five-Year Plan, excluding the value of equipment not included in construction project estimates.

As the scale of production grows and fixed assets accumulate, the tendency of the proportion of this form of fixed assets reproduction to rise will apparently be retained. Only a sharp change in the nature of raw material, fuel and energy use, that is, the transition to a materials-saving path of development, will facilitate reducing the growth in expenditures on developing the extractive branches.

One important factor in fixed assets and production capacities reproduction is the trend which has developed towards increasing costs per unit of newly created production capacities even at the design stage. Analysis shows that, in addition to negative factors, the increasing costs are also influenced by the objective reflection of contemporary social demands. In 1980, the increased estimated cost due to increasing designed capacities and changing products lists, output quality and lowering output net cost was nearly 38 percent, about 30 percent being accounted for by projects and expenditures included additionally without increasing designed capacity, 10 percent by the increase in equipment costs, approximately three percent by changes in specifications and design norms and rules, nearly 13 percent by changing construction conditions due to adjustments in routes and utilities, and approximately one percent by planning errors.

In accordance with the procedure instituted last year, the approved estimated cost is the limit for the whole construction period. The estimate must be stable and economical. Many capital construction questions cannot be resolved without improving the quality of planning developments and determining a reliable project cost in the planning stage.

We need to improve the scientific-technical substantiation of the estimated cost of plans on the basis of maximum introduction of economical structural and modular-layout resolutions, the use of effective construction materials and components while meeting the mandatory condition that the primary influence is exerted by factors lowering estimated construction cost, rather than factors raising it, even in the planning stage. Following economy procedures must become a decisive criterion for evaluating the quality of planning as an important prerequisite to lowering specific capital investments. However, little attention has thus far been paid to this question.

The ministries and departments which should have analyzed in detail the estimated cost of enterprises to be built in the 11th Five-Year Plan paid insufficient attention to this. Jointly with the ministries, departments and union republic councils of ministers, the USSR Gosstroy, which is responsible for conducting a unified technical policy in construction and planning, is faced with intensifying its work on unconditionally lowering the estimated cost of carryover projects by five percent in the 11th Five-Year Plan.

As one of the stages of fixed assets reproduction, planning must create objective conditions for normalizing the situation in construction. However, it still often happens that ministries and departments work out estimate-planning documentation without adequate economic substantiation of the appropriateness of beginning the

construction of individual projects. As a result, it is written off as unneeded. The cost of such discarded work has exceeded 200 million rubles just in the next to last year of the 10th Five-Year Plan. At the same time, a number of large construction sites have been built lacking the needed estimate-planning documentation. Thus, according to the 1980 plan, 192 enterprises with a total estimated cost of 26.7 billion rubles were built without estimate-planning documentation approved in the proper order and amount.

The ministries and departments and the USSR Gosstroy are faced with a great deal of work on re-evaluating existing norms and rules for planning, with revealing the reserves and excesses created by them. Estimate-planning documentation must determine precisely which are start-up complexes in accordance with the refined general plans for branch development. Coordinating the functioning of capital investment planning, design and construction is a prerequisite for eliminating the causes of many negative phenomena in capital construction. It is now hard to find another sphere of the economy about whose shortcomings so much has been said and so much concern has been shown as capital construction and actualizing the basic provisions of our investment policy.

The primary construction shortcoming is the reduced capital investment effectiveness which has accompanied its growth. Systematic, progressive lag in carrying out plan assignments on putting production capacities and fixed assets into operation, as well as the growth in unfinished construction, have frozen enormous national economic resources for many years, reducing the effectiveness of their use. The number of production construction projects alone exceeded 27,000 at the start of the 11th Five-Year Plan. At the 1981 plan level, about five years would be required to fully utilize the remaining estimated cost of these construction projects.

The ratio of unfinished construction and capital investment at the end of the last year of the five-year plan had worsened four points in the Eighth Five-Year Plan, two points in the Ninth and 12 points in the 10th. Only in the last year of the 10th Five-Year Plan did we manage to lower the amount of unfinished construction from 91 to 87 percent of the total amount of annual capital investments.

There are many examples in capital construction practice of the creation of large national economic projects within normative schedules or ahead of schedule. But unfortunately, approximately two of every three construction projects are built in violation of normative schedules. As a result, the national economy fails to receive an enormous amount of products needed by the country each year. The primary task for a majority of construction workers in the next years of the five-year plan will obviously remain attaining the approved construction normatives. To this end, we will need to concentrate all types of resources at the five-year plan's start-up construction projects.

It is no less important that we ensure the proper cost per unit of newly operational production capacities. The assignments established by preceding five-year plans for improving these indicators have not been met in a majority of the branches. The objective factors increasing costs (utilization of new regions, complex mining and geological conditions, increasing environmental protection measures and others) have not been fully counterbalanced by improvements in planning and construction organization, by intensifying the impact of the latest achievements of science and engineering on the construction process. And neither are we succeeding fully in doing this now.

Thus, specific capital investments per unit of output produced increased as follows during 1981-1985 as compared with 1976-1980: nearly nine-fold per ton of increment in petroleum extracted, 21 percent per ton of coal mined branch-wide, 39.3 percent per ruble of increment in commodity tool-making output, and 18.2 percent per ruble of increment in tractor and agricultural machinebuilding.

What causes these phenomena? There are several causes, and they act in an interconnected fashion, intensifying the negativity of the consequences. The primary cause is the extremely broad construction work front, the absence of proper construction concentration, and, as a consequence, a continuing scattering of capital investments. It is difficult at present to evaluate the overall, total estimated cost of construction in the country, since only production projects are recorded at the start of a new five-year plan.

The question of concentrating capital investments was not fully resolved in the 10th Five-Year Plan. In the final year of that five-year plan, the full estimated cost of production projects and construction sites using state capital investments had risen 37 percent as compared with the first year. Capital investments needed to master construction to full completion had increased 35 percent. This permitted an increase in average construction site and project readiness from 49 to 50 percent, but it did not solve the problem as a whole.

Accelerated construction front growth eliminates the possibility of balancing construction with resources and capacities, leading to a lengthening of construction schedules. Analysis of the causes of failure to put projects into operation promptly shows that about 25 percent of all cases are to be explained by failure to balance the work front with the capacities of construction organizations, 28 percent by the unavailability of building materials and components and 15 percent by failure to deliver equipment promptly. It is this very concentrating of capital investments and resources along the pivotal lines of development that forestalls these negative consequences.

A second cause would be the diminished role of the state plan in the distribution and use of capital investments. Given capital investment scattering, planning discipline and responsibility for end results are lowered. At the same time, the existence of this cause is also associated with shortcomings in the management and planning system.

When working out the 1982 plan, the ministries and departments made proposals on beginning about 2,000 construction projects with estimated costs of three million rubles or more this year. This number was reduced to 600 in the branch departments of the USSR Gosplan, and to 385 new construction projects after final review.

At the same time, methods of substantiating the demand for capital investments for the national economy as a whole, as well as of distributing them by branch and sphere with consideration of the priority of the latter, also require improvement. A graphic example would be experience in working out the 10th Five-Year Plan. A list of the most important new construction projects was approved as part of it. The 1978 plan anticipated 475 new construction projects with an estimated cost of over three million rubles, only 150 of which were from the previously compiled list of the most important projects.

The roots of the above-indicated causes lie in slow planning improvement and an inadequately systematic national economic approach to developing branches in each link

of the economic mechanism. With a view towards improving the balance method in national economic planning, the influence of the capital investments balance as an integral part of the national economic balance should be strengthened when working out branch capital investment plans. It must reflect more fully the proportionality of the stages of the reproduction process, including its material-substantive proportions, by encompassing planning and construction.

It has become necessary to create a capital construction planning system which will facilitate increasing the balance and unity of planning resolutions when planning and distributing capital investments and material-technical and labor resources, using capacities and distributing construction organizations in conformity with the basic requirements of the national economy. Heretofore, the opportunities for actively influencing the production capacities balance have not been fully used in planning. With the changeover to an intensification track, the necessity has arisen for reviewing a number of regulatory provisions on shift index, withdrawing capacities and defining the leading indicators to be taken into account when calculating capacity.

In spite of the availability of an approved method, construction organization capacities balances are still not being used, making it difficult to coordinate construction-installation work plans. Things are especially poor in planning using the new normative method. As experience in shaping the 11th Five-Year Plan has shown, only a third of the ministries and departments had approved and coordinated capital investment normatives. And the methods for developing them which were approved in 1969 now require improvement. Among the top-priority steps to develop a system of norms and normatives is the completion in 1982 of methods for the normative base being created to plan capital investments in the 12th Five-Year Plan.

Attention should be focused on strict observance of plan discipline and on the ministries and departments preventing the scattering of capital investments and any increase in estimated costs. We need better monitoring of the quality of new construction projects.

The basic demands of investment policy are reflected in structural changes in capital investments and the priorities stemming from party economic policy. The technological, reproduction and branch structures of capital investments are shaped by establishing priorities reflecting the natural sequence for solving problems associated with developing the national economy. The leading such structure is reproduction, which influences the technological structure of capital investments. The demands worked out in the course of shaping it emerge as national economic limitations on branch capital investment plans. The reproduction structure determines the amount of new construction. The principle of a capital investment policy oriented primarily towards retooling and renovating existing production facilities will obviously be effected throughout the 1980's.

By influencing the active portion of fixed assets, retooling represents the complex of measures involved in replacing, updating or adding to that portion without expanding the available production space of existing production. The renovation of existing enterprises is a broader form of updating fixed assets, inasmuch as it generally concerns some buildings and structures, in addition to the active portion of assets. Both these forms have the single goal of updating assets and production capacities to increase the production of output, broaden its assortment and improve its quality, in accordance with the growing requirements of the national economy. As distinct

retooling, in renovation, the production space in auxiliary shops can be increased when necessary to improve the use of basic shop capacity.

Although having a single plan, like expansion of an existing enterprise, renovation differs in that it does not include increasing the space in existing shops in basic production. In practice, basic shops are frequently retooled simultaneously with renovation. However, in this case, as distinct from expansion, the indicated forms of reproduction do not increase the production space of the basic shops.

In a theoretical understanding, the expansion of existing enterprises is a partial case of new construction for the purpose of creating new assets and production capacities on a production site set aside for an operating enterprise or on sites adjacent to it. The additional impact is achieved through the use of existing utilities and capacities, generally of auxiliary and servicing facilities and primarily through the participation of an existing production collective with experience at the existing enterprise in creating the new capacities.

At the present stage of capacities reproduction, we should emphasize the importance of a comprehensive approach, which is expressed in changing over to the creation of territorial-production complexes, in a different attitude towards installing social, cultural and housing projects whose scale and prompt construction exerts an effect not only on the installation schedules for fixed assets, but also on mastering and operating them. The time has obviously come to review the existing procedure for planning them and determining normative documents reflecting the schedules for installing how many social-sphere projects as a function of the production capacities being created. This demand of socialist reproduction is in particular being intensified by the utilization of new regions of the North and East, although it is equally pressing in the European portion of the country as well. The necessity of such an approach stems from planning practice. In the course of implementing a plan, proposals are made increasingly frequently that social-sphere projects be created, especially concerning housing construction, at the expense of limiting the production sphere.

A comprehensive approach to solving problems connected with equipment delivery is especially important. Delivery of technological equipment for enterprises under construction and being renovated in complete sets by the machinebuilding ministries is one of the most important measures which qualitatively changes the organization of construction-installation work. Today, about 10 percent of the equipment intended to meet capital construction needs is covered by such deliveries. By increasing the industrialization of construction production, such deliveries in the form of sets with a high degree of factory finish and pre-installation permit reducing construction duration and obtaining a national economic impact estimated to be approximately 10 percent of estimated cost.

We also must have a new approach to drawing up branch retooling plans which, unfortunately, still have the force only of optional documents. Branch retooling and renovation plans must be worked out in close interaction with plans for scientific-technical progress, reducing manual labor (and especially difficult manual labor) and changing over to fundamentally new technology with maximum production specialization and cooperation.

By virtue of the diversity of enterprise ties, we need to change over from renovating and retooling individual enterprises to the planned, systematic retooling of branches in order to prevent intrabranch disproportions and to approach to the extent possible

a technological level corresponding to the latest achievements of science, engineering and scientific labor organization. Retooling and renovation will become a natural stage of expanded reproduction on a new technical basis. However, as work on the list of most important enterprises in each branch to be renovated and retooled in the 11th and 12th five-year plans has shown, the ministries have turned out to be unprepared for this activity. They still lack the proper attitude towards working out such a list as is done for the basic direction of developing existing branch enterprises and construction organizations. It is for precisely this form of reproduction that construction workers ordinarily have the lowest plan fulfillment.

Inasmuch as this type of construction will be the basic one in the European portion of the country in the current five-year plan and in subsequent years, the planned concentration of renovation and retooling projects in the production program of individual construction organizations must obviously lead to their specialization in the indicated branch, to the creation of specialized construction organizations in which the proportion of existing enterprise retooling and renovation work will be 70-75 percent of all work. The experience of such construction administrations shows that specialization increases labor productivity 6-7 percent and renovation intensiveness 8-10 percent.

Growth in the retooling and renovation of existing enterprises and reducing new construction improve the technological structure of capital investments by reducing the proportion of construction-installation work and increasing the proportion of equipment. The proportion of capital investments on retooling and renovation in production construction is increasing to 32.5 percent in the 11th Five-Year Plan, as opposed to 29.2 percent in the 10th. The proportion of construction-installation has dropped from 54 percent of all capital investments in the 10th Five-Year Plan to 51 percent in the current five-year plan. By 1980, the proportion of equipment had reached 38 percent of all capital investments, a five percentage-point increase in the 10th Five-Year Plan as against the Ninth.

This has been a very important change in the reproduction structure, inasmuch as an increase of just one point in the overall capital investment volume as compared with the level previously achieved ensures the release of more than one billion rubles more worth of output per year for the national economy as a whole.

We should also include among the long-term trends in changes in the technological structure of capital investments the increasing proportion of other expenditures, the primary cause of which is growth in expenditures on drilling in petroleum and gas extraction industry.

The influence of the cost factor on raising the proportion of equipment as a result of growth in the cost of a unit of capacity of both imported and domestic equipment is also causing particular concern among changes in the technological structure. This factor diminishes the influence of the active portion of new fixed assets on production efficiency. We should therefore properly adjust the transfer of the cost of equipment purchased abroad to domestic prices.

The state of affairs in producing equipment on the basis of individual orders, which accounts for 20-70 percent of the total cost of equipment in individual branches, also requires careful analysis. In a majority of cases, supplier-plant cost calculations based on one-time orders exceed the estimated sums for these purposes.

A continued rise in the proportion of retooling and renovation in the technological structure of capital investments can significantly improve it by intensifying the influence of capital construction on the type-structure of fixed assets and increasing the active portion, equipment.

As in the preceding three five-year plans, the 11th continued to give priority to the production sphere. However, beginning with the Ninth Five-Year Plan, the increase in the proportion of the production sphere in capital investments distributed has slowed. The increment in its proportion being planned in the 11th Five-Year Plan corresponds to the level which actually evolved during the 10th and is less than in the Ninth.

In the nonproduction sphere, structural changes in capital investment distribution are basically the same as in the 10th Five-Year Plan. In the current five-year period, we intend to build 530 million square meters of total housing space, expanding housing starts in the eastern regions of the country and in rural areas. We will continue strengthening the material base of public education. General educational schools with places for 4.3 million pupils, including 2.3 million seats in rural areas, will be built through state capital investments. We plan to develop the public health system as follows during the five-year period: the number of hospital beds is to be increased by 306,000 and the number of outpatient polyclinic institutions -- by 442,000 visits per shift.

When shaping the branch structure of capital investments in the material sphere, preference has been given to branches without whose accelerated development it will be impossible to resolve the most important national economic tasks. The proportion of industry in the 11th Five-Year Plan will be increased by 4.4 points in total capital investment volume as against the 10th. Within industry, capital investments will be concentrated on resolving pivotal tasks in order to continue the line of accelerated development of the base branches of industry.

As compared with the 10th Five-Year Plan and the 1980 level, the amounts of capital investment in developing nuclear power engineering, the extraction of gas and petroleum and mining cheap power coals by the open-pit method will be increased. The country is embarking on the installation of large gas pipelines with a high degree of automation. The first stage in implementing the gigantic energy program required corresponding resources. The proportion of the fuel-energy branches in total capital investments will be increased 3.4 points in the 11th Five-Year Plan as compared with the 10th. In 1981-1985 as a whole, about 132 billion rubles in capital investment will be directed into developing the fuel-energy complex, or 1.5-fold more than in the 10th Five-Year Plan.

Considerable capital investment is being allocated to ensure development of the production of structural materials, and especially of effective types of metal products. Machinebuilding branches will be given priority, not only as the basis for accelerating scientific and technical progress, but also because they produce consumer goods and machinery and equipment for agriculture.

Resolution of the top-priority tasks of developing heavy industry has increased its proportion of total capital investment volume to 27.4 percent in the 11th Five-Year Plan, as against 24.2 percent in the 10th.

We anticipate directing nearly 190 billion rubles in capital investment, or more than 27 percent of the total for the national economy, into strengthening the material-technical base of agriculture and ensuring the planned levels of development of agricultural production for the entire complex of work, including kolkhoz funds. Among the priority branches will be microbiology and feed production as concerns the creation of capacities to procure and store feed. More funds are being allocated to develop Group "B" branches of industry and rail transport than were allocated in the 10th Five-Year Plan.

The indicated structural changes in capital investments must increase the effectiveness of the latter. The increment in commodity output of industry per ruble of state capital investments during the 11th Five-Year Plan will be increased 8.3 percent as compared with the reporting data for the 10th Five-Year Plan.

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CONSTRUCTION

RECONSTRUCTION OF INDUSTRY DISCUSSED

In Belorussia

Minsk PROMYSHLENNOST' BELORUSSII in Russian No 1, Jan 82 (signed to press 21 Dec 81)
pp 30-35

[Article by Candidate of Economic Sciences P. Kapitula, problems of fixed assets reproduction sector chief, BSSR Academy of Sciences Institute of Economic "Renovation: Tasks and Their Resolution"]

[Text] 1. Command of the Times

In the past decade, more than 11 percent of the national income in our country has been directed into developing fixed production assets. In Belorussia, fixed production assets increased 1.4-fold during the 10th Five-Year Plan.

Whereas earlier new construction and the expansion of existing enterprises was the form for increasing fixed assets and production capacities, new construction has now become inefficient. We have already accumulated a fixed assets potential requiring enormous expenditures to maintain just at the proper technical level. This means the task is not to continue to increase it, but to use it efficiently. Moreover, consideration must be given to the fact that increasing the number of new construction sites scatters funds, increases the cost and time involved in building projects and in the end, leads to growth in the national economic capital- and fund-intensiveness of the output. At the same time, we must achieve serious advances in increasing capital investment effectiveness. In fact, the planned increase in national income in the five-year plan is to be ensured, as N. A. Tikhonov stated in his report at the 26th CPSU Congress, with a smaller absolute and relative increment in capital investment than in the preceding five years.

The policy worked out by the party of intensifying social production and improving its efficiency thus demands changes in the proportions of capital investment distribution among the various forms of fixed assets reproduction and establishing the priority of such forms as renovating and retooling existing enterprises.

The advantages of renovating and retooling enterprises are manifested in many branches of industry in a reduction in capital investment per unit of increment in output due to a reduction in the amount of construction work and an increase in the proportion of expenditures on the active portion of fixed assets, in labor productivity growth and a decrease in production outlays. Using the experience of our own skilled

personnel, the economic ties which have evolved, and often a production and social infrastructure, enables us to shorten the "planning - construction" investment cycle and the cycle of utilizing production capacities and to obtain other advantages.

According to USSR Gosstroy data, specific capital investments in enterprise renovation average 8-10 percent less than those on expansion and new construction, and the figure is higher in individual branches of industry, 20-25 percent in light industry, for example. The USSR Central Statistical Administration recently conducted a one-time survey of the efficiency of new and renovated enterprises. Labor productivity at the latter turned out to be 50 percent higher than at new enterprises and the return on capital was 86 percent higher.

At the same time, the state of affairs in the renovation field thus far does not meet modern requirements. This form of reproduction does not always bring the desired impact.

First of all, the proportion of expenditures on new construction and expanding existing enterprises is high in the BSSR national economy, which increases the strain on the balance of construction organization capacities and generally leads to consistent underfulfillment of the contractor work plan. About 70 percent of all capital investment is utilized in these ways, more than half of which is accounted for by the construction of new enterprises. In 1978-1979, renovation accounted for only 11-12 percent of all capital investment and retooling -- 14-16 percent. During these years, expenditures on renovation and retooling were more than 50 percent only in the BSSR Ministry of Food Industry and at enterprises of the Ministry of Agricultural Machinebuilding and Ministry of Instrument Making, Automation Equipment and Control Systems, of all branches of republic industry.

Neither can we consider efficient the amounts of renovation work done in recent years, since construction-installation work accounted for a significant portion of it. The technological structure of renovation capital investments turned out to be worse than for new construction and enterprise expansion. Thus, construction-installation work comprised 81.9 percent of renovation expenditures in 1979; it comprised 4.8 percent of retooling expenditures, 56.5 percent of expenditures on expansion and 68.9 percent of expenditures on new construction. The picture is even worse for enterprises and organizations subordinate to the BSSR Council of Ministers. Construction and installation comprised 70.3 percent of all renovation expenditures by the BSSR Ministry of Meat and Dairy Industry in 1979, 76.5 percent for the BSSR Ministry of Light Industry, 86.1 percent for the BSSR Ministry of Building Materials Industry, and more than 93 percent for machinebuilding enterprises.

2. Why?

The situation which has evolved in the enterprise renovation capital investment technological structure is to be explained in considerable measure by the reproduction structure planning methodology adopted. Although it has been improved over that previously in effect, mixing enterprise expansion and renovation work is still permitted.

Thus, for example, under the present methodology, new auxiliary and servicing facilities can be built and existing ones expanded in the course of renovation, and new basic production facilities can be built and existing ones expanded to replace those of the same type being eliminated at the same site or facility whose continued

operation is deemed inexpedient. First, neither territorial affiliation nor production capacity nor functional designation can serve as a criterion for delimiting new construction or renovation. The essence of new construction cannot be changed from the above-cited criteria or from the fact that it is oriented towards the expanded reproduction of fixed assets and capacities or towards their replacement. This also applies to new low-waste and waste-free production facilities, expenditures on which also being considered renovation. Second, if we proceed once again from the essence of new construction, putting up new auxiliary and servicing facilities and expanding existing ones can in no way be related to renovation.

The delimitation of enterprise expansion and renovation on the basis of the affiliation of projects with basic or auxiliary and servicing production facilities is artificial, just as is the division of production into basic, auxiliary and servicing. It is this very division that has served and often continues to serve as the basis for a negative attitude towards developing auxiliary and servicing production facilities. This negative attitude is screened by concern for saving resources at all stages of the investment process and is sometimes dictated entirely by mercenary interests. It is only at the stage of utilizing planned capacities that both the perverseness of such an approach on production efficiency and the objective necessity of reckoning with the law of proportionality of production development as a single, integral organism is revealed.

Data on the technological structure of capital investments testifies as well to the fact that resources on developing so-called auxiliary production are "saved" both in the stage of planning new construction and expanding existing enterprises and in the design stage. This "savings" improves the effectiveness of the designs and consequently makes both the procedure for approving them and organizing material incentives easier. But project design and capital investment planning mistakes must be corrected by renovation which, in this instance, is essentially not renovation and cannot be called efficient.

According to the existing methodology, relating enterprise renovation and expansion work done simultaneously to a particular form of fixed assets and capacities reproduction is dependent on which type of work predominates. And that means that if expenditures on expansion comprise less than half the total amount of capital investment, all investment will be related to renovation. And the reverse, if they comprise even slightly more than half the total amount of expenditures on expansion and renovation, they will be related to expenditures on expansion. In our view, this delimitation criterion is ill-chosen.

Only reproduction of the active portion of fixed production assets on the basis of the latest achievements of science, engineering and technology for the purpose of increasing production volume, expanding the assortment and (or) improving the quality of the output, and improving production efficiency can be an objective criterion of both renovation and retooling. In advancing reproduction of the active portion of fixed assets as this criterion, we deliberately omitted the word "expanded." The fact is that even simple reproduction of fixed assets in terms of value, but on a new technical basis, is essentially expanded reproduction, since it ensures expanded reproduction of the social product. But inasmuch as the latter is promoted as the goal of retooling and renovation, there is no necessity of setting renovation and retooling the task of expanded reproduction of production capacities.

As a criterion of renovation and retooling, reproduction of the active portion of fixed assets objectively delimits these two forms of reproduction from new construction and the expansion of existing enterprises. Therefore, given one-time renovation and expansion work, the estimated cost of re-equipping and rearranging existing production shops and sectors must be related to expenditures on its renovation, but the estimated cost of new facilities at an existing enterprise must be related to expenditures on its expansion.

3. Reproduction Must Be Labor-Saving

I should now like to deal with that form of fixed assets reproduction which is the expansion of existing enterprises. It is generally recognized that it essentially is no different from new construction done on the site of an existing enterprise or at adjacent sites. The criterion of territoriality is obviously too indefinite here, as well, first of all because it is not entirely clear what to relate the adjacent sites to and second, given intensification of the processes of collectivizing production, when its primary cell is becoming the production associations, the former enterprises lose their status as such and become ordinary shops and sectors. The expansion of such shops cannot be called expansion of an existing enterprise, in the strict sense, for then it would be easy to relate any new construction to expansion of an existing production association. The essence of the problem is in defining the limits of efficiency of expansion and new construction and, consequently, in the planned determination of priorities among these two forms of fixed assets reproduction.

Economic experience testifies to the advantages of expanding enterprises over new construction. However, these advantages are evident only under otherwise equal conditions. One such condition must be level of production concentration and specialization. Under the impact of various objective and subjective factors, industrial enterprises have long been planned and built calculating on a so-called closed production cycle, that is, as combines, with their inherent diverse production structure. Unfortunately, we often continue to plan and build that way even now, although domestic and world experience testifies to the considerable advantages of narrowly-specialized enterprises with high production volumes. As compared with the construction of narrowly-specialized production facilities, the expansion of enterprise-combines, like their construction, not only has no economic advantages whatsoever, but is even a brake on scientific and technical progress. Moreover, it should be borne in mind that the expansion of existing enterprises retains both the evolved production structure and the evolved production and labor organization, the level of which is significantly inferior to production and labor organization at highly mechanized enterprises which are narrowly specialized. The evolved level of production and labor organization at existing multiple-specialty enterprises often reduces to naught all the advantages of new equipment and technology at new facilities at that particular enterprise. In this connection, the construction of new enterprises with high production volumes and narrowly specialized to produce general machinebuilding and general industrial output should be viewed as the most important direction in which to improve the efficiency of social production.

The objective necessity of building new enterprises while there is an absolute limit on labor resources requires a different approach to planning and carrying out renovation work. Its essence is that it ensures a labor-saving direction to renovation work. Reproduction of the active portion of fixed assets at existing enterprises corresponds fully to this direction, since any new construction or expansion is aimed

at creating new jobs and at an influx of additional manpower. At the same time, the national economy is already experiencing significant losses of machinery and equipment operating time due to understaffing.

According to data from a one-time BSSR Central Statistical Administration survey of republic machinebuilding, down time due to understaffing (with consideration of losses in auxiliary production) accounts for at least 40 percent of all losses of equipment operating time, which is equivalent to whole-day down time for more than 12 percent of all installed equipment. Given the limited labor resources and their planned distribution, equipment down time for this reason must be viewed as a consequence of unsubstantiated decisions at the planning and design stages. The low level of technical-economic substantiation of plans for new construction and the expansion and renovation of existing enterprises often leads to a situation in which planned capacities are not utilized fully for many years, the shift index of equipment operation rises slowly and the level of return on capital rises slowly, due to the lack of manpower. The renovation and expansion of many industrial enterprises is done without consideration of data on unsatisfactory equipment use and limited labor resources. Thus, for example, the shift index at Minsk Machine Tool Building Plant imeni S. M. Kirov was 1.06 after renovation in 1973, but had risen to only 1.38 by 1980. It was 1.19 at the automatic lines plant, and had risen to 1.37 by last year. According to the renovation and expansion plan, "Gomsel'mash" was to have attracted an additional roughly 12,000 workers. However, it was known that neither Gomel' nor Gomel'skaya Oblast had available free resources. Neither are they expected to increase. Consequently, we can already say that either the schedules for utilizing the capacities at these plants will turn out to be above the normative or the influx in workers due to higher wages in machinebuilding will lower the equipment and capacities use level at enterprises of other branches of industry in the city and oblast.

The inordinate increase in the creation of additional jobs has been turned into losses for society. Thus, for example, capacities at Gomel' Foundry light-section casting shop were utilized scarcely more than 20 percent in 1979, although the normative schedule was up back in March of 1978. The main causes were a lack of skilled specialists, high personnel turnover and a high percentage of defects. All this was a result of the infamous manpower shortage. In turn, this deficit resulted from the fact that, as was noted above, miserly amounts of capital investments, including equipment, had been directed into the renovation, retooling and maintenance of existing capacities. Consequently, only reproduction of the active portion of fixed assets on a new technical basis can facilitate successful fulfillment of the tasks set by the 26th CPSU Congress on developing industrial production in the European portion of the country and the Urals "basically through the better use of existing production potential and through the renovation and retooling of existing enterprises without increasing the number of workers."

4. Three To Five Percent Annually!

In our view, science and economic practice are now faced with a series of unsolved problems in the area of planning and stimulating the development of existing production. The most pressing are the problems of choosing planned periods for increasing production capacities and production volume at existing enterprises, or essentially the same thing, the problem of choosing planned periods for beginning and ending work on renovating and retooling existing enterprises.

It is known that each new or comprehensively renovated enterprise whose design embodies the latest achievements of science and engineering requires only that it be maintained in efficient operating condition. Designs not meeting these requirements clearly should not be approved, and any attempts to actualize them must restrained by the whole economic mechanism. The time for which the operability of an enterprise is ensured is, as is known, determined by unified state norms of wear in the physical-substantive elements of fixed assets or by norms of depreciation deductions for renovation which, by their very essence, take into account both physical wear and obsolescence. Capacities and production volumes are increased at such enterprises only by utilizing the capacities. Outside of that, any increase in capacity and production volume requires proportional development of all production facilities, shops and sectors. In connection with the above, we need to determine first if we should plan for a given enterprise an annual increase in output beyond the period in which the capacities are mastered and, second, if so, to what form of fixed assets reproduction should preference be given?

In the first instance, our economic practice provides an affirmative response. A situation has evolved in which an annual increase in production volume of at least 3-5 percent is demanded of each industrial enterprise in each five-year plan. This demand is reinforced by corresponding methods recommendations on developing a five-year plan for the industrial enterprise. The planning methodology which has evolved is obviously convenient in its simplicity: "from what has been achieved" and "based on what has been achieved." Convenient, but not to all, since such assignments might be insignificant for some enterprises and impossible for others. Such planning has thus far only been talked about, unfortunately. True, that in no way signifies that an annual assignment to increase output by 3-5 percent cannot be justified in terms of enterprise opportunities. These opportunities might be beyond the period for mastering designed capacities and might be concealed in various forms of fixed assets reproduction.

A logical analysis demonstrates most obviously the inexpediency of systematically expanding just-built or comprehensively renovated enterprises for the purpose of annually increasing production volume 3-5 percent, since this would transform them into permanent construction sites and would divert considerable forces from the efficient use of the production apparatus already created. At the same time, installing an additional few units of equipment, modernizing or replacing an insignificant proportion of the equipment in connection with physical wear and obsolescence, introducing means of production process mechanization and automation, that is, carrying out a complex of measures relating to retooling in terms of the existing methodology, is clearly inadequate for proportional development of all production facilities, shops and sectors and for increasing capacities and production volume. Neither can we recognize as being sufficiently efficient the renovation form of fixed assets reproduction which counts on an insignificant annual increment in production volume, since here, too, we would have to divert considerable forces from effective use of the apparatus already created. It should be noted that fixed assets reproduction at all existing enterprises for the purpose of increasing production volume 3-5 percent annually leads to scattering capital investments, does not permit the full use of the advantages of new equipment scattered among many projects and leads to disproportions in production capacities, that is, to so-called "broad" and "narrow" spots. Consequently, the methodology which has evolved of planning an annual increase in production volume at existing enterprises cannot be considered adequately substantiated, or its implementation adequately effective. Capacities growth must be not 3-5 percent at all 10 enterprises (be they plants producing the same types of tractors or cars, for example), but 30-50 percent at one or 15-25 percent at two.

Just what is hindering the planning of significant increments in capacities and production volumes?

5. "Bottlenecks" -- Not Reserves, But Losses

As was already noted, one factor blocking planning of significant increments in capacities and production volumes is the methodology of planning "from what has been achieved" and "based on what has been achieved." Another and more significant factor is imperfections in the existing system of stimulating production collectives and, in particular, imperfect methodology for planning average wages. The latter generally do not depend on the level of efficiency or even on the level of labor productivity, but only on the rate of labor productivity growth. And it is here, as we see, that this same principle of planning "from what has been achieved" and "based on what has been achieved" rules. But is it really possible to ensure any significant labor productivity growth without increasing production volume? It is very difficult. But even if it were possible, this might have no effect on the average wage, as the wage fund normatives are linked to production volume, and not to its efficiency. Is that not why the mastering of designed capacities and other technical-economic indicators stretches out for years? These progressive design normatives are sometimes not reached at all.

The overall wage fund and average wage must, in our view, be set with consideration of the designed production efficiency and must be closely linked to the process of mastering it. In this instance, the enterprise collective would be vitally interested in mastering all design indicators as quickly as possible. Moreover, it would have no grounds for complaining about a lack of growth in the wage fund for a certain period beyond the schedule for mastering design indicators, since the average wage would be higher than branch or regional enterprises with a lower level of production efficiency.

The current methodology of planning annual growth in insignificant production volumes proceeds from the presence at existing enterprises of so-called "bottlenecks" and the high efficiency of loosening them in the course of renovation and retooling. But whence commeth "bottlenecks" at enterprises newly built following progressive designs or comprehensively renovated? They might be caused by a change in enterprise specialization. However, that is rare. They might arise if new types of output with a low level of standardization is being mastered. But, based on the experience of certain countries, it first of all makes sense not to decide to master output with a standardization level below 80 percent. Second, it must be remembered that new output is not being mastered each year at existing enterprises. There would thus seem to be no grounds for thinking that there are "bottlenecks" and that they must be loosened to increase production volumes each year. But that is not so. There are "bottlenecks," and we create them ourselves. They are systematically born of the creation of "wide" spots in the course of...retooling and renovation, which has no beginning or end. It is often hard to determine when the process of reproducing assets begins and when it must end and in which form it has been done. Expansion and renovation take 4-6 years even at such large republic enterprises as the Minsk tractor plant, worsteds plant and other plants, and they often take 10-14 years at small enterprises.

Delay in and incompleteness of retooling and renovation work are what generate both "wide" and "narrow" spots. And this must be given a proper economic evaluation. That is, we should look at it not from the viewpoint that "bottlenecks" are production

reserves which could provide an additional impact, but from the viewpoint that the presence of "wide" spots means the underutilization of fixed production assets for long periods of time. The management slogan should be not to eliminate disorder, but to prevent it. In practice, this means rejecting the continuous reproduction of fixed assets and increasing production volumes and capacities each year, and instead, changing production over to comprehensive improvement and to an ideally adjusted, highly productive operation.

Comprehensive production improvement using various forms of fixed assets reproduction once every 8-10 years must be calculated to significantly increase capacities and production volumes, as well as to sharply improve production efficiency. Such an approach will permit successful implementation of the task set by the 26th CPSU Congress of concentrating capital investments.

The CPSU Central Committee and USSR Council of Ministers Decree "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Improving Production Efficiency and Work Quality" outlines a number of specific steps aimed at comprehensively improving production on the basis of retooling and renovating existing enterprises. They include the development of summary renovation and retooling plans, the top-priority allocation of material resources and equipment for these purposes, as well as the necessary capital investment limits, construction-installation and contractor work, granting production association (enterprise) leaders rights conforming to the capital investment limits set them, approving retooling and renovation titles lists independently of the total estimated cost of the work, intensifying the interest of contractor organizations in retooling and renovation and the material interest of workers in planning and construction-installation organizations in carrying out this work.

The actualization of these measures and the resolution of other pressing problems will facilitate successful implementation of the policy outlined by the 26th Party Congress of retooling and renovating existing enterprises.

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In the Ukraine

Moscow STROITEL'NAYA GAZETA in Russian 20 Jan 82 p 2

[Article by G. Khmel'nitskiy, manager of the Ukrainian Republic Office of the USSR Stroybank (Kiev): "Renovation Loans"]

[Text] A majority of the enterprises of the Ukraine reckon their age in decades, and some were built back in the last century. The resolution adopted by the 26th CPSU Congress to direct capital investments foremost into renovation and retooling is therefore especially important for this republic. Renovation, and especially retooling, is less capital intensive and permits a rapid increase in capacity.

Beginning this five-year plan, the plan delineates the indicator of start up of capacities and projects through renovation and retooling. Moreover, the size of the bonuses for performing rebuilding work at an existing production facility and the wages of workers and engineers have been increased 10-15 percent.

As in new construction, a large role is being given to bank crediting. In the CPSU Central Committee and USSR Council of Ministers decree on improving the economic mechanism, the USSR Gosbank and Stroybank are instructed to issue credit, when necessary, for renovation and retooling, for acquiring technological and power equipment, prior to its release for installation or to start-up of the capacity using calculations for finished output.

How does bank credit work under the new terms? An enterprise or construction organization borrows money from the state at specified interests for the time needed. If it confines itself to the allotted time, there are both profits and bonuses; if not, higher interest rates are paid. Judge for yourself: when a renovated facility is released ahead of schedule, you pay up to one percent of the total sum loaned, on schedule -- two percent, and behind schedule -- up to five percent, which the client applies to output net cost and the contractor applies to the net cost of the construction-installation work. Thus, the higher interest was more than 20 million rubles for delay in meeting repayment schedules in construction of facilities at Lischansk Oil Refinery and at "Azot" and "Stirol" associations in Gorlovskiy and Dneprozerzhinsk.

In 1975, the UkrSSR Ministry of Food Industry built and put into operation Teofipol'skiy Sugar Refinery using loaned funds. Due to poor utilization of the capacities and plan underfulfillment, the collective was unable to repay the debt promptly and had to pay 144,000 rubles in higher interest just through early 1981.

It must be said that many leaders took the loans reluctantly in the beginning and preferred irrevocable financing to them, as the responsibility was too great. But everyone gradually became convinced of the advantages of crediting. It hampers the scattering of funds and forces a more careful substantiation of the appropriateness of expenditures, and in the end, it revivifies financial activity. These figures testify to the increasing prestige of credit: during the last five-year plan alone, the republic Stroybank issued upwards of 15.8 million rubles to meet renovation needs (twice as much as in the five-year plan before last). This permitted putting 2,205 enterprise facilities into operation and the manufacture of an additional 200 million rubles worth of output per year, on average. And the renovated enterprises reached designed capacity as a rule twice as fast as at analogous construction projects being financed from the budget.

The proportion of renovation and retooling is increasing each five-year period. As of this five-year plan, it has reached 67 percent of the total capital investment plan.

We also must not fail to note this trend: together with the reduction in budget allocations (from 33.7 percent in 1976 to 26 percent currently, and these funds essentially go only to install housing, social and personal-services projects), the number of enterprises being renovated through own funds is increasing. Whereas 56 percent of the construction projects were financed this way in 1976, the figure was 65 percent in 1980. And understandably so: renovation from one's own account, or more accurately, through the production development fund, permits maneuvering funds and ridding oneself of bank fines in case of nonpayment during the loan period. Of course, there can be good profits only at large enterprises in such branches as coal and metallurgical industry. There, expenditures are recompensed quickly, within 3-5 years. But for sugar industry, let's say, it is more advantageous to take out a bank loan, since funds are recompensed slowly there.

How renovation and retooling is done in the republic can be judged by individual oblasts. In 1980, some 39 enterprises were renovated in Dnepropetrovskaya Oblast with the participation of bank credit, permitting an increase in production by 2.162 billion rubles per year. During the 10th Five-Year Plan, the Kiev Stroybank Office issued long-term credit for the construction of 130 enterprises. Eighty-six of them were renovated or retooled. High efficiency has been achieved as a result of re-equipping "Azovkabel'" plant in Berdyansk. The proportion of the active portion of fixed assets here rose from 45 to 56 percent and about 60 workers were freed for other jobs. There are many such examples. They confirm the advantages of renovation, and especially of investments with the advantage with the active portion of fixed assets.

In studying the technical-economic indicators of renovated enterprises and comparing them with planning resolutions, Stroybank institutions often make proposals aimed at attaining higher indicators than planned. The Chernigovskaya Oblast office, for example, proposed that renovation of a pilot line to produce polyamide filament at the "Khimvolokno" association eliminate expenditures on acquiring textile filament processing equipment (looms, "STB-2-175 MK"'s, "K-3/5 NK"'s) and use dismantled equipment. This proposal was accepted and yielded a significant impact.

And there are also instances in which the Stroybank has required that a plan be sent on for a second expert appraisal. When "Nezhinsel'mash" plant was renovated, for example, this permitted an increase in capacities to produce output worth most than 44.4 million rubles.

The proportion of allocations to renovate enterprises in the Ministry of Food Industry and Ministry of Procurement has been high, and in 1981, the UkSSR Ministry of Light Industry directed all capital investments into renovation and retooling.

But the planned allocations are not always and in fact used effectively. It happens that an enterprise or shop is moved to a new site under the guise of renovation, but not for technological reasons, but for urban-development or other considerations. Thus, "Ukrkabel'" plant in Kiev and enterprises in several republic cities have been moved. In a number of instances, old buildings are taken down under the guise of renovation and others are built to replace them, but of entirely different size, which is essentially new construction.

In 1978, the UkSSR Ministry of Meat and Dairy Industry planned to renovate Vinogradovskiy Cheese Plant using an imported equipment system. When the bank reviewed the technical design, it was established that all the existing buildings and installations would either be taken down or used as auxiliary facilities. Moreover, the existing plant was processing 13 tons of milk into butter per shift and was called a city dairy plant, but after the so-called renovation, it would be processing 25 tons of milk into whole milk and cheese per shift and would be called a cheese plant. The value of the fixed assets at the existing plant was 788,000 rubles, and the cost of the renovation was to have been upwards of nine million rubles. We naturally demanded that this be called new construction.

Of course, these and other decisions retard the rates of technical progress, improving labor productivity and capital investment effectiveness as a whole. Equipment that is both obsolete and obsolescent is sometimes replaced slowly. It has evidently become necessary to direct depreciation deductions into financing the repair of obsolete machines and into the acquisition of new and more productive machines.

CONSTRUCTION

UDC 69.003:658.012.2

GOSPLAN CONSTRUCTION DEPARTMENT HEAD ON RESULTS, NEW TASKS

Moscow EKONOMIKA STROITEL'STVA in Russian No 1, Jan 82 (signed to press 29 Dec 81)
pp 13-20

[Article by USSR Gosplan member S. N. Bulgakov, chief of the department of construction and construction industry: "Builders in the Second Year of the Five-Year Plan"]

[Text] The resolutions of the 26th CPSU Congress, the November (1981) CPSU Central Committee Plenum and the sixth session of the USSR Supreme Soviet set new frontiers which must be reached by our country in further economic growth, improving the well-being of the people and strengthening our defense capability.

The country is entering a new stage in implementing party economic strategy, practical actualization of the national economic development program has begun in accord with the USSR State Economic and Social Development Plans for 1982 and for 1981-1985.

At the November (1981) CPSU Central Committee Plenum, Comrade L. I. Brezhnev described capital construction as the decisive sector of the 11th Five-Year Plan. This imposes special responsibility on the work of all construction organizations.

State contractor organizations did 67 billion rubles worth of work in 1981, some 1.4 billion rubles above that actually done in 1980. More than 500 large facilities were put into operation through state capital investment. They include capacities for mining and processing iron ore at Olenegorskiy Ore-Enrichment Combine, large rolled ferrous metal products capacities at Cherepovets, Western Siberia and Saldinskiy metallurgical plants and initial processing installations at Baku and Lisichansk oil refineries.

The Punga - Ukhta - Gryazovets gas pipeline, the Ust'-Kut - Kunerm BAM sector, Mubarek-skii Gas Processing Plant, Kaliningrad poultry farm, elevators, mixed feed enterprises, stockraising complexes and other capacities are now operational.

A large increment in production capacities was obtained by renovating existing enterprises. Thus, due to the considerable amount of work done at existing ferrous metallurgy enterprises in 1981 by the USSR Ministry of Construction of Heavy Industry Enterprises, USSR Ministry of Construction and USSR Ministry of Installation and Special Construction Work, jointly with the USSR Ministry of Ferrous Metallurgy, pig iron production capacities increased by 420,000 tons at Rustava Metallurgical Plant, rolled ferrous metal production capacities at Magnitogorsk combine, Western Siberia and Saldinskiy metallurgical plants increased by 850,000 tons and the coking battery

capacity at Magnitogorsk Metallurgical Combine was increased from 630,000 to one million tons of coke per year. However, the plan for starting up a number of very important capacities was underfulfilled.

The primary reason was the continuing unsatisfactory work of the main construction ministries. Confirmation of this is found in their work results for 1981. Thus, the USSR Ministry of Industrial Construction and USSR Ministry of Construction did practically the same amount of work they did in 1980, while the USSR Ministry of Construction of Heavy Industry Enterprises did 98.8 percent of the work it did in 1980.

At the same time, it should be noted that construction worker collectives of the Ministry of Transport Construction, USSR Ministry of Power and Electrification and USSR Ministry of Installation and Special Construction Work successfully coped with the 1981 program under equal conditions, and in individual regions under more complex conditions. The Ministry of Construction in the Far East and Transbaykal Regions achieved higher rates of work volume growth than in 1980 (106 percent).

It is known that success in resolving the tasks set for 1982 and subsequent years of the five-year plan also depends largely on the level of fulfillment of the assignments set for 1981, especially in putting production capacities into operation.

As Comrade L. I. Brezhnev pointed out at the November (1981) CPSU Central Committee Plenum, one feature of the 11th Five-Year Plan and the 1982 plan is the fact that they anticipate a significant increase in the start-up of fixed assets with slower capital investment growth.

The capital investment limit for 1982 was set at 137.4 billion rubles, or 1.2 billion rubles less than for 1981. The limit on construction-installation work from all sources of financing was set at 69.7 billion rubles, or 1.1 billion rubles lower than the 1981 plan.

Considerable funds are being directed into developing branches of the fuel-energy complex, machinebuilding, chemical industry and ferrous and nonferrous metallurgy, which are called upon to ensure a rise in the technical level of social production and further effective development of the entire economy. Particular attention is being paid to the food program and to building enterprises ensuring the release of consumer goods.

We anticipate putting into operation through state capital investments in 1982 fixed assets totalling 117.4 billion rubles.

The volume of contractor work this year will be 70.4 billion rubles, a 4.3 percent increase over that actually done in 1981. Contractor work volume growth rates above those for the national economy as a whole have been set for the Ministry of Construction of Petroleum and Gas Industry Enterprises -- 112 percent. This is to be explained by the fact that the capital investment plan anticipates an outstripping allocation of funds for the development of branches for which this ministry does the bulk of their work.

The 1982 capital construction plan is characterized by better balance with construction organization capacities. Thus, the contractor work volumes for the basic construction ministries -- USSR Ministry of Construction of Heavy Industry Enterprises,

USSR Ministry of Industrial Construction and USSR Ministry of Construction -- must grow five to 6.6 percent as compared with 1981, while the 1981 plan anticipated a growth of nine to 17 percent as compared with that actually done during 1980. High growth in work volume has been established this year for the Ministry of Construction in the Far East and Transbaykal Regions -- about 16 percent, but conditions are special here and appropriate steps are naturally being taken to successfully resolve the tasks facing this ministry. The Ministry of Construction in the Far East and Transbaykal Regions has been allocated considerable funds to develop its own construction base, additional contingents of workers are being sent there and additional equipment is being allocated.

More precise coordination of branch and territorial planning is characteristic of the plan for the second year of the five-year plan. For example, given an overall growth in work volume of 6.6 percent for the USSR Ministry of Industrial Construction, the growth is 2-3 percent for more than 20 of its 27 territorial main administrations and republic ministries and exceeds six percent for only five (Glavastrakhanstroy, Glavkrasnodarpromstroy, Glavzapaduralstroy and the Sumpromstroy and Ivano-Frankovskpromstroy combines). It is they to which particular attention must be paid. A similar situation has also evolved in other general construction ministries.

In working out the 1982 contractor work plan, it was first of all anticipated that construction of carry-over projects and start-up of their production capacities would be completed. Similar priority was given to the construction of projects being built on the basis of compensatory agreements and imports of complete sets of equipment, of projects ensuring fulfillment of the food program and the development of consumer goods production.

As always, questions of the prompt start-up of production capacities and projects were the center of attention.

In describing the 1982 construction program, we need first of all to note that it orients all construction participants towards improving capital investment effectiveness, towards better coordinating capital investments with the material-technical resources and opportunities of construction and installation organizations. Capital investments are being directed foremost into renovating and retooling existing enterprises. In consideration of this, capital investments for these purposes will increase 2.4 percent in 1982 as compared with 1981.

The capacities of power engineering, fuel industry, ferrous and nonferrous metallurgy, chemistry and machinebuilding will increase significantly in 1982. Among the most important projects to be put into operation are:

power engineering: new turbines at Kurpsayskaya GES and in the Kirghiz SSR, the Shamkhorskiy hydrosystem in the Azerbaijan SSR, large power units at Chernobyl'skaya AES in Kiev Oblast and at Kalininskaya AES, Ekibastuzskaya and Surgutskaya GRES's;

gas industry: gas pipelines from the gas fields in northern Tyumenskaya Oblast -- Urengoy - Petrovsk and Urengoy - Novopskov;

coal industry: "Tyul'ganskiy" open-pit coal mine in Orenburgskaya Oblast, "Pavlovskiy" in the Far East and "Neryungrinskiy" in Yakutskaya ASSR, and capacities at "Zapadno-Donbasskaya" Mine No 21/22 and "Abashevskaya" Mine in Kemerovskaya Oblast;

ferrous metallurgy: new iron ore mining capacities at Kostomukshskiy Ore-Enrichment Combine in the Karelian ASSR and in Stoylenskiy ore administration in Belgorodskaya Oblast, a renovated convertor shop at Dneprovskiy Metallurgical Plant in

Dneprodzerzhinsk, a multipurpose girder mill at Nizhnetagil'skiy Metallurgical Combine, capacities to produce steel pipe at Vyksinskiy Metallurgical Plant, a coking battery in Zaporozh'ye and first-line facilities at Oskol'skiy Electrometallurgical Combine.

The capacities of plants producing mineral fertilizers for agriculture must increase by three million tons.

A large part of the enterprises under construction are part of such territorial production complexes as the Pavlodar-Ekibastuz, Bratsko - Ust'-Ilimskiy, Kansko-Achinsk, Sayanskiy and others. The formation of such complexes permits faster growth in the economic potential of the new industrial regions which are rich in raw material and energy resources.

The capacities of enterprises producing agricultural machinery and equipment for stockraising and feed production will increase significantly in 1982. The largest capacities are to be put into operation at Krasnoyarsk Combine Plant and at Uman'skiy, Gomel'skiy and Rostov agricultural machinebuilding plants.

Continued development of the material-technical base of agriculture is anticipated for the second year of the five-year plan. In order to implement the food program worked out on the initiative of Comrade L. I. Brezhnev, the plan anticipates building and renovating more than 100 production capacities and facilities just in food, meat and dairy industry.

Moreover, we plan to put 76 poultry farms geared to meat and egg production and 13 large stockraising complexes to produce beef and pork into operation in agriculture.

With a view towards further increasing the production of manufactured consumer goods, upwards of 60 production capacities must be built and renovated in 1982 in light industry alone.

Construction of the Baykal-Amur Mainline will be continued, with the Urgal - Berezovka - BAM line beginning full-time operation. The throughput capacity of existing main-lines will be increased. Existing sea and river ports and air-transport facilities will be expanded and new ones will appear; thousands of kilometers of hard-surface highways and other transport installations will be built.

As in preceding years, housing construction occupies a large place in the construction-installation work program. This year, we plan to put into operation a total of about 107 million square meters of housing. More and more houses are being built following new standard plans with improved lay-outs and apartment finishing.

In order to ensure that the work volumes planned for 1982 are carried out, we anticipate a continued increase in the capacities of enterprises and construction organizations, especially in eastern regions of the country. To this end, we plan to direct 3.8 billion rubles into developing the "Construction" and "Construction Components and Parts Industry" branches, with consideration of the proportionate participation of other branches; this includes 0.7 billion rubles for construction-installation work.

Some 2.6 billion rubles of total capital investments in developing the branch is being directed into acquiring construction machinery, vehicles, equipment and means of

transport in 1982, which is 68 percent of all funds allocated to develop the material-technical base of construction. When working out the plan, particular attention was paid to developing the production base of the Ministry of Construction in the Far East and Transbaykal Regions and organizations of other construction ministries working in regions of Siberia and the Far East.

By renovating, expanding and retooling existing enterprises and building new ones, we anticipate putting into operation capacities to produce 5.3 million cubic meters of prefabricated reinforced concrete components and items, including capacities to produce a total of 2.5 million square meters of panels and other parts for new series of large-panel houses and capacities to produce 25,000 tons of steel building components.

Such large enterprises as the 140,000 square meter large-panel house-building plant in Chita and the 97,000 cubic meter lightweight concrete products plant in Ulan-Ude (Ministry of Construction in the Far East and Transbaykal Regions), a 140,000 square meter large-panel house-building plant in Sharypovo, Krasnoyarskiy Kray (USSR Ministry of Power and Electrification) and the 80,000 cubic meter reinforced concrete components plant at Overyatskiy, Permskaya Oblast must become operational in 1982. In Tashkent, the Glavtashkentstroy must put into operation a new modular room-unit house-building plant with 121,000 square meters of total space. We also plan to put into operation enterprises to handle 2.5 million rubles worth of major overhaul on construction and road machinery and vocational-technical schools with places for 8,860 students.

This year's industrial production plan anticipates the release of 120.5 million cubic meters of prefabricated reinforced concrete components and items, 4,698,000 tons of steel building components, lightweight metal components for buildings with a total space of 4,646,000 square meters, 55,700 tons of aluminum alloy components and items and 179,000 cubic meters of glued wooden components.

This five-year plan, the USSR Ministry of Installation and Special Construction Work is for the first time being set assignments on producing and delivering prefabricated buildings (modules) made of lightweight metal components in complete sets. These complete-set deliveries also include engineering equipment for the buildings: sanitation engineering, heating, illumination and ventilation. We plan to deliver 560 such buildings in 1982 and 780 in 1985.

In the 10th Five-Year Plan, the number of excavators, bulldozers, boom and tower cranes per million rubles of construction-installation work increased 10-15 percent, the availability of machinery to labor in the basic contractor ministries increased 35-40 percent and the availability of energy to labor increased 20-25 percent.

In 1982, contractor construction ministries and departments are to be sent more than 8,000 single-scoop excavators, 8,700 bulldozers, 6,400 truck-mounted cranes, 1,900 assembly cranes and 1,500 tower cranes. Construction organizations will be supplied with new and improved types of machines, including the EO-4124 tractor-type caterpillar excavators, the DP-31KhL tiller-excavator, the BKM-1501 drilling crane, 100-ton caterpillar cranes, the KB-676 and KB-504 tower cranes, and concrete haulers and mixers with an 8-m³ ready-mix capacity. Calculations show that the delivery of this amount of equipment must ensure fulfillment of the planned amounts of construction-installation work and permit a slight increase in the withdrawal of worn-out and obsolescent equipment from operation.

One characteristic feature of the first years of the 11th Five-Year Plan in solving problems of equipping construction with more means of mechanization is the increased attention to the most common, least-mechanized types of work -- concreting, painting, plastering and electrical work. As USSR Central Statistical Administration data from a census of occupational composition show, it is in precisely these jobs that the number of workers engaged in manual labor increased in the 10th Five-Year Plan. In this connection, experience in using the high-pressure vacuum paint sprayers manufactured by the Ministry of Construction, Road and Municipal Machinebuilding, the concrete surface vacuum machines whose production has been mastered by enterprises of the USSR Ministry of Construction and USSR Ministry of Industrial Construction, the experience of organizations of the USSR Ministry of Power and Electrification, USSR Ministry of Construction of Heavy Industry Enterprises and other construction ministries in introducing concrete pumps, hydraulic jack-hammers for working rocky and frozen ground and standard sets of power and hand tools into construction practice deserves attention.

Given the demographic conditions which have evolved, carrying out labor productivity growth assignments and performing the planned amounts of work with minimum numbers of workers have acquired particular importance. For construction as a whole, the 1981 labor productivity growth assignment was set at 3.5 percent. Labor productivity actually increased 2.2 percent during the first nine months of last year. In this regard, it should be noted that assignments higher than the average level for construction (4.5 percent) were set the main construction ministries, and their level of fulfillment was lower. Thus, labor productivity in the USSR Ministry of Construction of Heavy Industry Enterprises increased one percent as compared with the same period in 1980, for the USSR Ministry of Construction -- 1.9 percent, and for the USSR Ministry of Rural Construction -- 0.6 percent.

The failure to meet labor productivity assignments is to be explained by shortcomings in the organization of construction production and labor and by significant losses of working time. Interruptions in material-technical supply, the unavailability of individual types of construction machinery and means of small-scale mechanization and failure to carry out the construction freight shipment plan were largely to blame for this.

The plan for the second year of the 11th Five-Year Plan anticipates a 3.5 percent rise in labor productivity for construction as a whole. In this regard, as in past years, above-average assignments have been set the main construction ministries. More than 60 percent of this labor productivity increment must be obtained by raising the level of construction industrialization, and approximately 40 percent must be obtained by improving construction organization.

In 1981, the average number of construction workers on establishment, both in construction-installation work and at auxiliary production facilities, remained practically the same as in 1980, and for several construction ministries (USSR Ministry of Construction of Heavy Industry Enterprises, USSR Ministry of Industrial Construction, USSR Ministry of Rural Construction, USSR Ministry of Installation and Special Construction Work) it decreased somewhat. However, the high turnover in worker personnel is alarming.

One source of skilled worker personnel for construction projects is the vocational-technical schools. Unfortunately, the plans for sending their graduates to construction sites are consistently not carried out.

Under these conditions, creating stable worker collectives must be considered one of the basic tasks of construction organizations. To do this, we need to significantly improve production and labor organization at the construction sites and to display more concern for improving working conditions. Providing workers with permanent, well-equipped housing plays a role of considerable importance in this area. Based on the experience of a number of collectives, this problem is best solved by building dormitories for single people, one-room or small apartments for young families and workers with small families, subsequently allotting them more living space as their families grow.

Carrying out the measures outlined in the CPSU Central Committee and USSR Council of Ministers Decree "On Steps to Further Improve the Training of Skilled Personnel and Securing Them in Construction" adopted in January 1979 must facilitate creating stable worker collectives.

In particular, this decree anticipated instituting a one-time reward for years of service for construction-installation organization workers. We began calculating this reward in October 1979 in the Kazakh SSR, and this procedure was extended over the next two years to a majority of the country's regions and is to be completed in July 1982. It should be noted that worker turnover in construction organizations has decreased appreciably since adoption of the indicated decree.

In late 1980, the State Committee for Science and Technology, USSR Gosplan, USSR Gostroy and the Presidium of the USSR Academy of Sciences reviewed and adopted a target comprehensive scientific and technical program for developing progressive technology and industrial methods of construction on the basis of developing and widely using effective building materials, items and components, machinery and equipment and tools which will ensure a reduction in construction labor- and materials-intensiveness. This program has been made the basis of plans for developing science and engineering in 1981-1985 and 1982.

We anticipate increasing the volume of fully prefabricated construction to 29.4 billion rubles in 1985, which is 15 percent higher than the anticipated level for 1981. As a result of the reduced volume of construction-installation work in 1982, the volume of fully prefabricated construction will hardly increase, reaching 25.6 billion rubles in construction-installation work. The start-up of large-panel and modular room-unit housing is to increase 21 percent by 1985 as against the anticipated 1981 level, and eight percent in 1982.

According to the science and engineering development plans for 1981-1985 and 1982, the amount of work being done by progressive methods is to increase significantly. Thus, the amount of construction using monolithic reinforced concrete components and installations made using stock forms is to be increased 58 percent in 1985 as compared with 1981, seven percent in 1982, and the manufacture of bearing and enclosure components and items made from lightweight concrete is to be increased 22 and 2.3 percent, respectively.

In order to verify the technical-economic indicators of new design and lay-out resolutions aimed at reducing the materials- and labor-intensiveness of construction, a draft experimental construction plan has been drawn up for the first time for 1981-1985; it includes 122 industrial, power, transport, civil and housing construction and agricultural projects.

In accordance with the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979, a system of interconnected measures is being implemented to perfect the planning and financing of capital construction and the organization of construction production. Calculations for work done are generally made between clients and contractors for fully completed construction and enterprises, start-up complexes, lines and projects ready to produce output or render services which have been released for operation.

The number of new construction projects in the plan is being reduced year by year, which will doubtless facilitate concentrating construction. Preparatory work is being completed on switching construction to planning labor productivity on the basis of normative nominal net output. Planning in the Lithuanian SSR Ministry of Construction and Ministry of Rural Construction, the Latvian SSR Ministry of Construction and a number of construction-installation trusts of other ministries is already being done using this indicator.

Construction workers are armed with a precise work program for both 1982 and the period up to 1985. Both construction-installation work volumes and a start-up program have been approved through the end of the five-year plan. This will permit better preparation for carrying out assignments on putting projects into operation and performing the increasing amounts of work. This is especially important in the northern and eastern regions of the country, as well as in regions of concentrated construction.

At the November (1981) CPSU Central Committee Plenum, Comrade L. I. Brezhnev emphasized that we now have a feasible, better-balanced capital construction plan. This creates the conditions necessary for normal work. It is a matter of honor for construction workers to cope with the taut, responsible tasks entrusted to them by the party and government, to put all 1982 and 11th Five-Year Plan projects and capacities into operation on time.

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CONSTRUCTION

SIBERIA: HOUSING CONSTRUCTION

Housing Construction in Western Siberia

Moscow ZHILISHCHNOYE STROITEL' STVO in Russian No 7, Jul 81 (signed to press 9 Jul 81)
pp 11-12

[Article by P. G. Zubov, gosarkhstroykontrol'ya administration chief with the Gosgrazhdanstroy: "Building Up the Cities of Western Siberia"]

[Text] The 26th CPSU Congress stressed the special importance to the country's national economy of further developing the Western Siberian petroleum and gas complex. There is an enormous amount of work being done to utilize the riches of this region. There is large-scale housing, cultural and personal-services construction in the cities and settlements of Tyumenskaya and Tomskaya oblasts.

Cities and settlements are built up following plans worked out in accordance with the demands of the natural-climatic conditions of the northern regions of the country. The level of architecture of housing and civic buildings is rising.

The industrialization of housing and civil construction is growing. The proportion of fully prefabricated house-building is 91 percent of all construction in Surgut, 82.4 percent in Nizhnevartovsk, 79.7 percent in Nefteyugansk, 61 percent in Nadym, 51 percent in Tobol'sk, 49.5 percent in Tyumen', that is, it is practically at the level planned for the 11th Five-Year Plan.

Specialized contractor organizations are being created in the Ministry of Construction of Petroleum and Gas Industry Enterprises Glavneftegazstroy and USSR Ministry of Industrial Construction Glavyumenpromstroy to build utilities, amenities and landscape cities and settlements. Changing worker collectives over to the brigade contract is receiving considerable development in construction organizations. This is helping improve labor productivity and the quality of construction-installation work.

The SibZNIIEP [Siberian Zonal Scientific Research Institute of Modular and Experimental Residential and Public Building Design], LenNIIgradostroitel'stva [not further identified], Tomskgrazhdanproyekt [not further identified] and other institutes have participated extensively in improving the quality of modular-layout resolutions for housing regions and in promptly working out the necessary urban development documentation for cities and settlements of Western Siberia.

However, housing, cultural and personal-services construction in this region still lags behind the rates of industrial construction and the start-up of production capacities. This leads to certain difficulties, in particular, in terms of providing worker personnel for construction-installation organizations and construction-industry enterprises.

In 1980, the plan for putting housing, general educational schools and children's institutions into operation in Tyumenskaya Oblast was underfulfilled. The housing space start-up plan was not carried out in Nizhnevartovsk, Tobol'sk, Nadym and Novyy Urengoy and in the settlements of Noyabr'skiy, Beloyarskiy, Pyt'-Yakh, Mamontovo, Nyagan and Langepas.

The USSR Ministry of Industrial Construction's Glavomskpromstroy, Glavzapuralstroy and Glavvostoksibstroy, which were enlisted in housing construction in Nizhnevartovsk, failed to ensure complete-set house parts deliveries and did not carry out the 1980 plan for putting housing into operation.

The main reasons for failure to carry out housing, cultural and personal-services projects construction plans include the failure to deliver promptly or have the necessary inventory of building materials and components and planning deliveries of them for the second half of the year. Moreover, the failure to provide work fronts at the proper time or prepare construction sites, delay in below-grade work and laying utilities, as well as planning the bulk of the housing start-ups for the fourth quarter of the year, also play a role.

To illustrate the last situation, let's look at several figures. In the fourth quarter of 1980, Surgut put into operation 41.2 percent of the total housing space, Nizhnevartovsk -- 50.5 percent, Nefteyugansk -- 48.6 percent, Nadym -- 64.3 percent, Uray -- 56.7 percent and Novyy Urengoy -- 53.2 percent.

For Tyumenskaya Oblast, 1980 deliveries of brick, crushed rock and gravel were unsatisfactory, in which connection the demand for these materials was not fully met. Neither was the demand for inert materials at large-panel house-building plant fully met.

Poorest-organized were brick deliveries by enterprises of Sverdlovskaya, Tomskaya, Kemerovskaya and Permskaya oblasts and Komi ASSR.

Organizations of the Glavyumenneftegaz and Tyumengazprom associations, which are entrusted with the functions of single clients for building up cities and settlements, have in a number of instances done practically nothing to carry out those functions. In this connection, steps to comprehensively build up microrayons have not been carried out, the even distribution of construction volumes by quarter has not been ensured, and housing construction is scattered among many microrayons, whose developers continue to be organizations of different departments.

For example, six clients are building up the city of Surgut. In this regard, Surgutneftegaz association, which has been approved as the sole client, accounts for only half the amount of housing, cultural and personal-services construction being done in the city. In Novyy Urengoy, the development is being done by eight clients. The Orlovskiy experience in comprehensive flow-line construction and putting projects into operation is in practice not receiving the necessary application.

In connection with the incompleteness of city development, the provision of cultural and personal-services projects for them leaves much to be desired.

Utilities construction lags significantly. Thus, for example, water treatment plants have been under construction since 1976 in Nizhnevartovsk and only 50 percent of the estimated cost has been utilized. In Novyy Urengoy, the Glavtyumenneftegazstroy's Urengoystroy trust is not doing any construction work on the sewage treatment plant.

Effective steps are not being taken in cities and settlements of Tyumenskaya and Tomskaya oblasts to improve civil and housing construction quality. The prefabricated reinforced concrete items being produced by local construction industry enterprises do not meet a number of All-Union State Standard (GOST) specifications. Thus, a tool check at the USSR Ministry of Industrial Construction's Glavtyumenpromstroy's Nizhnevartovsk Large-Panel House-Building Plant established that violations of GOST specifications for manufacturing items reached 28 percent for outside wall panels made of lightweight concrete, 25 percent for roofing panels and 19 percent for ventilation units. At Tyumenskiy House-Building Combine (Glavtyumenpromstroy), GOST violations were 21 percent for roofing panels, 22 percent for inside wall panels, 38 percent for staircases and 41 percent for stairwell landings.

Prefabricated reinforced concrete and ordinary concrete components are accepted and stored in violation of construction norms and rules specifications. Housing and public building component collection and set-assembly and building material collection centers in Nefteyugansk, Nizhnevartovsk, Novyy Urengoy and elsewhere are organized and equipped unsatisfactorily.

Deviations from plans are permitted and violations of construction norms and rules are allowed when putting up housing and public buildings.

In Surgut, Nefteyugansk, Nizhnevartovsk, Nadym, Novyy Urengoy and Strezhevoy, large-panel and large-module housing is installed with an impermissible mixing of items, with inadequate deep-support for components, and with poor-quality subassembly slabbing and embedded-parts welding. The seams between panels in outside walls are inadequately sealed and finished, leading to seepage and frost penetration when housing is operated.

Microrayon development site landscaping and provision with amenities goes undone for long periods due to the lack of needed construction organization capacities in the Glavtyumenneftegazstroy and Glavtyumenpromstroy.

In a number of instances, the normative duration of project construction has not been followed. For example, 11 housing and civil-construction projects were built in Nefteyugansk in excess of the normative construction schedules.

Technical supervision on the part of client organizations of the Glavtyumenneftegas, associations of the Tyumengazprom, Glavtyumengeologii and other clients has been ineffective. Technical supervision workers do not make sufficient use of the rights granted them to interdict substandard construction.

Operational and input monitoring is not being done at construction industry enterprises and in construction organizations of the USSR Ministry of Industrial Construction and Ministry of Construction of Petroleum and Gas Industry Enterprises; implementation documentation and work journals are unsatisfactory.

Author's supervision is inadequately effective at LenZNIIEP [Leningrad Zonal Scientific Research Institute for Modular and Experimental Design for Residential and Public Buildings], LenNIIgradostroitel'stva, SibZNIIEP and Tomskgrazhdanproyekt.

All the above-indicated shortcomings and unsolved problems definitely delay continued development and improvement in the quality of housing, cultural and personal-services construction in these regions and, in turn, the utilization of their riches.

In this connection, we think a number of steps must be taken to fully resolve the tasks in the area of housing and civil construction in the cities of Tyumenskaya and Tomskaya oblasts.

First, housing and civil construction funds for cities of the petroleum and gas complex must be concentrated at a single client, the USSR Ministry of Petroleum and Gas Industry or USSR Ministry of Gas Industry.

Second, the ministries and departments participating in building up the cities of Western Siberia must do so comprehensively, with the prompt start-up of cultural and personal-services projects.

Third, the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises and USSR Ministry of Industrial Construction are obligated to take every step which will permit ensuring the manufacture of fully prefabricated housing components at subordinate enterprises and their delivery from other regions of the country in the amounts necessary to meet the assignments set for putting housing space and cultural and personal-services projects into operation.

Fourth, the USSR Ministry of Timber, Pulp and Paper, and Wood Processing Industry must ensure the prompt delivery of wooden fully prefabricated housing in the approved volumes.

Fifth, the USSR Ministry of Construction of Heavy Industry Enterprises, USSR Ministry of Industrial Construction and USSR Ministry of Construction should ensure the delivery of housing and public building enclosure components which meet the requirements placed on Western Siberian construction by the climatic conditions of the regions.

Sixth, the ministries of Construction and Petroleum and Gas Industry need to accelerate the construction of a unified production base for the Glavyumenpromstroy in Nizhnevartovsk.

Moreover, with a view towards curtailing departmental disconnectedness in utilizing nonore quarries, it would be appropriate for the USSR Ministry of Building Materials Industry, jointly with the organizations concerned, to review the question of concentrating all sand and crushed rock quarrying within Tyumenskaya Oblast in the Glavyumenpromstroymaterialov system.

Along with this, author's supervision of construction by planning organizations and technical supervision by clients must be more active.

Carrying out the resolutions of the 26th CPSU Congress as they concern further developing the petroleum and gas complex of Western Siberia means the prompt, quality, comprehensive development of city and settlement housing regions and providing workers with modern, comfortable housing.

Conference on Development of Siberia, Far East Reported

Moscow ARKHITEKTURA SSSR in Russian No 11, Nov 81 (signed to press 16 Oct 81) pp 54-55

[Article: "Comprehensive Development of Siberian and Far Eastern Villages"]

[Text] Development of the economy of Siberia and the Far East is one of the most important tasks of the national economy. L. I. Brezhnev pointed out the necessity of significantly increasing the tempos of housing construction and the entire cultural and personal-services complex in the eastern regions of the country at the 26th Party Congress.

The accelerated development of the industrial-energy complex in the eastern regions and transport utilization of their enormous territories, with their inexhaustible mineral and raw material resources, are stimulating change in the settlement pattern which has evolved in the republic in connection with the movement of personnel to the East. However, personnel can be secured and high labor productivity ensured only by creating the necessary cultural and personal-services conditions and corresponding provision of the population with consumer goods, and foremost with foodstuffs. The problem of agriculture, of the food complex for the eastern regions, is therefore of decisive importance. It is known that architects and builders play a large role in the creation of conditions for successful labor, everyday life and recreation.

In this connection, a conference-seminar on the topic "Steps to Improve the Comprehensive Development of Rural Settlements of Siberia and the Far East and Providing Them With Public Amenities" was held in Krasnoyarsk.

The conference was prepared by the RSFSR Gosstroy, Krasnoyarskiy Kray ispolkom, RSFSR Gosplan, RSFSR Ministry of Agriculture, State Committee for Civil Construction and Architecture, RSFSR Ministry of Rural Construction, Roskolkhozstroyob"yedineniye, USSR Ministry of Timber, Pulp and Paper, and Wood Processing Industry and USSR Ministry of Construction of Heavy Industry Enterprises. Moreover, the republic Ministry of Culture, Ministry of Education, Rospotrebsoyuz, Ministry of Housing and Municipal Services, Ministry of Water Management and Reclamation, Ministry of Building Materials Industry, and others were also involved in preparing for the conference.

Party and soviet officials of the autonomous republics, krays and oblasts of the zone, ministries, departments, planning and construction organizations and farm leaders were invited.

The purpose of the conference was to work out organizational and technical measures on further improving the efficiency and quality of rural civil and housing construction, on introducing leading experience in the layout and comprehensive development of villages in Siberia and the Far East.

It was intended to show physically what social transformations have occurred specifically in the villages of Shushenskiy Rayon and how local organs of Soviet authority (rayispolkom) are aiding rural construction.

The conference was opened by RSFSR Deputy Council of Ministers Chairman A. M. Kalandzhnikov. A long welcoming speech was given by Krasnoyarskiy Kray party committee first secretary P. S. Fedirko.

RSFSR Gosstroy Chairman S. Sabaneyev gave a report on experience in planning, construction and the tasks of improving the comprehensive development of rural settlements of Siberia and the Far East.

Participating in discussion of the report were V. Bryukhanov, deputy chairman of Omskaya Oblast ispolkom, O. Poteryakhin, RSFSR Deputy Minister of Agriculture, Yu. Komissarov, Roskolkhozstroyob"yedineniya deputy chairman, F. Shenyder, Hero of Labor and chairman of the kolkhoz imeni Kirov in Altayskiy Kray, M. Klimenko, Kuzbassgi-prosel'stroy director, A. Vasil'yev, brigade leader in Buryatseinstroy trust, V. Kosonogov, rural construction department head for Tyumenskaya Oblast ispolkom, B. Tobilevich, chief of the Gosgrazhdanstroy's Rural Population Center Planning and Development Administration, and A. Kantur, deputy chairman of the Primorskiy Kray ispolkom.

The Krasnoyarsk conference was one of a series of RSFSR zone meetings. We plan to hold a series of zonal conference-seminars in order to work out questions connected with rural development throughout the republic. Six such conferences are proposed: Nonchernozem Zone (Gor'kiy), Siberia and the Far East (Krasnoyarsk), Volga (Saratov), Central Chernozem (Voronezh), Northern Caucasus (Rostov) and Urals (Sverdlovsk). The basic idea is to draw the attention of planners and builders and workers in building materials construction industry, culture, education, personal services, trade, and local party and soviet organizations to transforming the countryside.

The first of the anticipated conferences was held in Gor'kiy in 1980. The Krasnoyarsk conference generalized experience in developing villages in Siberia and the Far East. Why was Krasnoyarskiy Kray chosen as the site of the conference? First of all, because we could familiarize ourselves here with the benchmark settlements for this kray (Il'ichevo and Sineborsk). These are places connected with the life of V. I. Lenin, and they had to be transformed first. Moreover, the kray itself has a natural majesty, a beauty and spaciousness which captivate the spirit, and ambitious installations such as Sayano-Shushenskaya GES!

Mastering the countryside of this kray is a symbol of mastering the unruly Siberian and Far Eastern countryside. Steppe and taiga, tundra and mountain ranges, the great Siberian rivers, Baykal and the ocean coast! Eight climatic subregions, temperatures of -55°C recorded, seismicity of up to nine points, permafrost, cave-ins.

What is primary and has priority in successfully rebuilding the villages of this kray? There are several decisive factors here. We first must eliminate the scattering of housing construction throughout numerous settlements by concentrating it. Moreover, we need to improve settlement and create a unified system of cultural and personal services. At present, 17 autonomous republics, krays and oblasts of Siberia and the Far East are provided with comprehensive regional development plans. Regional development quality must be improved. In this regard, particular attention must be paid to developing regional centers. The intensive development of regional centers and good highways will permit actualization of the main idea of rebuilding and will ensure a higher level of cultural and personal services to the population.

A large role is given to architects in this matter. The diversity of natural-climatic conditions and other factors has a great influence on shaping village development and excludes entirely a stereotyped approach to this important component of rebuilding. Many population centers are typified by a national composition, each nationality with its own views on how to organize housing and personal services, on

running subsidiary farming. This demands of the architect great responsibility and a deep understanding of and careful attitude towards national traditions.

Comprehensively developed settlements we could name include Belorechensk, Kamenka, Novo-Gromovo (Irkutskaya Oblast), Ust'-Bren' (Buryatskaya ASSR), Chaa-Khol' (Tuvin-skaya ASSR), Malinovka, Karapsel (Krasnoyarskiy Kray) and a number of others.

The village of Yanchikovo, which is the central farmstead of "Gutovskiy" sovkhoz in Novosibirskaya Oblast, is distinguished by a good architectural-layout resolution. Skillful use is made of the natural surroundings here -- a river, a pine forest -- by creating an expressive, well-equipped and surprisingly spacious ensemble as the public center. The necessary collection of cultural and personal-services buildings has been built and the farmstead is 85 percent built up. This settlement was awarded the Exhibit of National Economic Achievements certificate in the all-union contest-review. The housing blocks in the experimental-demonstration settlement of "Barnaul'-skiy" sovkhoz (Altaygiprosel'khozstroy) consist of houses with different numbers of stories and different types of apartments, with built-in greenery and recreation and play grounds. Questions of building premises for keeping livestock and poultry have been resolved not only in farmstead plots, but also in the form of farm blocks serving residents of divided houses. Layout and development plans have been worked out at a high professional level for the villages of Luzino in Omskaya Oblast (Omskgiprosel'khozstroy), Nekrasovka in Khabarovskiy Kray (Amurgiprosel'khozstroy and Khabarovskgrazhdanproyekt), Klepka in Magadanskaya Oblast (Magadan branch of Krasnoyarskgrazhdanprosokhstroy), Chistopol'skiy in Kemerovskaya Oblast (Kemerovgrazhdanproyekt), Razdol'nyy in Kamchatskaya Oblast (Kamchatskgrazhdanproyekt) and many others.

Participants at the conference-seminar familiarized themselves with the use of fully prefabricated wooden farmstead houses to build up the villages of Il'ichevo and Sineborsk.

In the last round (1978) of the all-union review-contest, 64 Siberian and Far Eastern settlements received USSR Exhibit of National Economic Achievements certificates. This testifies to the rising overall level of quality of village planning. Compact development, precise zoning, well-chosen composition and consolidation of cultural and personal-services buildings. Public centers are distinguished by a properly chosen scale.

However, in spite of definite successes, much work faces us in improving the shaping of villages. First of all, every condition for developing private subsidiary farming must be created in the settlements. We are faced with a creative search for harmony between development and the natural surroundings. The unique landscapes of Siberia, the magnificent scenery of the Far East and the immense expanses of the North -- there are abundant conditions for the creative fantasies of architects. It must be remembered that nature is the architect's best ally in reorganizing villages.

It is known that production projects take on great importance in developing villages. Their silhouettes are always perceived as the leading architectural theme. Water towers and silos, boiler pipes and other vertical accents enable us to attach architectural expressiveness to settlements. Particular attention should be paid to using industrial house-building. Modern architectural resolutions for villages anticipate a variety of modular-layout resolutions and arrangements, the introduction of decorative elements made of wood and concrete and of textural and color resolutions in combination with the natural surroundings.

The review and discussion of draft layout and development plans at settlement meetings of sovkhoz workers and kolkhoz members and the rural intelligentsia, with the participation of architects and planners, must become the rule.

A large role in successful village development belongs to experimental construction. The positive role of experimental construction is indisputable. Generalizing experience in it facilitates the introduction of the most progressive layout, architectural and engineering resolutions into large-scale development and permits consideration of the regional and national-lifestyle traditions of the autonomous republics, krays and oblasts. We plan to build 15 experimental-demonstration sovkhoz and kolkhoz settlements in this region. Experimental construction is set up well in Krasnoyarskiy, Altayskiy and Primorskiy krays, and experiments are being run somewhat more poorly in Novosibirskaya, Amurskaya and Sakhalinskaya oblasts. However, contractor organizations are still working insufficiently energetically and the quality of construction-installation work is still poor. Experimental construction has not been properly organized in Yakutskaya and Buryatskaya autonomous republics, Chitinskaya, Tomskaya and several other oblasts. Jointly with contractor organizations, the RSFSR Gosstroy and RSFSR Ministry of Agriculture have reviewed the state of construction at each experimental settlement this year and have determined steps to improve it.

Providing villages with utilities is an important question. At present, only 10 percent of all investments in nonproduction construction is being allocated for village utilities development. At the same time, calculations and experimental construction practice demonstrate convincingly that specific expenditures on utilities equipment for settlements must be at the 27-30 percent level.

How do things stand with standard designs for villages of Siberia and the Far East?

The list of standard designs now includes 150 standard housing and public building designs for villages of this region. Moreover, upwards of 40 new standard housing, cultural and personal-services building designs have been worked out for construction on the BAM route. The basis of the list is the multipurpose industrial series-25 and series-135 (large-panel), series-17 (prefabricated slab) and series-115 (standard wooden houses made of squared beams, arbolite and large panels). However, only a few meet normative and typological requirements in the eastern regions. The RSFSR Gosstroy anticipates improving existing standard housing and public building designs and developing 42 new ones, including 28 designs for farmstead houses with farm outbuildings based on urban industrial series, as well as ones with squared-beam walls and other local materials and ones with sets of wooden factory-finished parts. This year, the planning base of rural housing construction will be expanded to include the use of components made by urban house-building enterprises.

Large reserves for lowering the cost of rural housing construction are inherent in the development of fully prefabricated rural house-building. This huge region has large-panel house-building enterprises with a capacity of approximately 600,000 m² of total housing space per year. However, only 56 percent of that capacity is being used. The progressive form of construction organization using rural construction combines has been developed very little. At present, there are 10 rural construction combines (SSK's) of the RSFSR Ministry of Rural Construction and five Roskolkhozstroyob'yedineniya SSR's in the eastern region. One of the main causes of failure of contractor organizations to meet rural housing construction plans has been the impermissibly low level of fully prefabricated construction -- only 14 percent. What

steps are being taken to eliminate these shortcomings? Joint resolutions by the RSFSR Gosstroy, RSFSR Ministry of Rural Construction and the Board of the Roskolkhozstroyob"yedineniya have approved additional assignments on building new enterprises and expanding existing ones, on improving production technology and raising the level of factory-finish and component quality for houses. Sixteen new SSK's are being created in the RSFSR Ministry of Rural Construction system in the 11th Five-Year Plan, which will permit increasing large-panel house-building capacity by 370,000 m² of total space per year.

Local architecture agencies must render every assistance possible in using the urban large-panel house-building base for the countryside by ensuring that designs are coordinated with local conditions and, when necessary, adjusting them with consideration of the technology of specific enterprises.

The introduction of standard wooden houses into rural construction is of national economic significance for the villages of Siberia and the Far East, with their inexhaustible timber raw material resources.

Construction quality is of decisive importance to successful village development, as always. What does construction quality mean? It is a very broad concept and includes concentrating construction volume, comprehensive settlement development, meeting schedules for putting up projects, urban-development discipline and following the approved planning-layout documentation. The concept of quality includes as well high-quality materials and components, general construction and finishing work. Also related to this is prompt work on utilities equipment and public amenities. It must unfortunately be noted that the quality of village development in Siberia and the Far East still leaves much to be desired. Thus, construction norms and rules are often violated, losses due to defects and work that must be redone are still high, and items often do not meet state standards specifications. As a result of the uneven start-up of projects, the bulk of the finishing work is done in the fall and winter, when it is impossible to achieve high quality under the harsh climatic conditions.

In order to build well and promptly, it is proposed that the brigade contract and the system of "guarantee certificates" be introduced universally in rural construction. We plan to institute operation quality control and the acceptance of work done in stages at enterprises and construction sites and to set up technical quality inspection at combines and trusts. All enterprises will manufacture reference standards of the items and components they produce and house-building combines will manufacture finished fully prefabricated buildings which will be a visual criterion of finished construction output quality.

Effective steps will be taken to strengthen agencies of the State Architectural-Construction Monitoring system, especially at the rayon level. This is especially important under the specific conditions of the regions of Siberia and the Far East. It has been decided to create autonomous republic gosstroys and to expand the rights of local architecture agencies. This will strengthen construction quality control.

The work of planning organizations requires considerable improvement. Unfortunately, not yet all institutes are paying the proper attention to planning village development. The number of architects in planning institutes designing for rural areas must be increased and the role of zonal institutes in implementing a unified technical policy must be increased.

Workers in local party and soviet organizations render much assistance in village development.

For example, the Krasnoyarskiy Kray ispolkom has reviewed eight questions connected with improving the development of rural settlements over the past three years. The Altayskiy Kray party committee set the task of building at least 25-30 houses on each farm each year. During the 10th Five-Year Plan, about three million square meters of housing was built here, facilitating the securing of personnel and stabilization of labor collectives on sovkhozes and kolkhozes of the kray.

In Altayskiy Kray's Slavgorodskiy Rayon ispolkom, much attention has been paid to rebuilding villages. Thus, relying on the active assistance and support of party organizations and the initiative of labor collectives and the entire populace, the rayispolkom, rural soviets and farms created a production base for individual housing construction. Brick plants producing more than 15 million bricks annually were built and are operating on rayon farms. All sovkhozes and kolkhozes have construction brigades. Sectors are set aside for individual construction and rayon architects monitor the use of designs and proper housing distribution. The age-old tradition of Russian villages building new houses for fellow villagers together, "the whole community," has been restored and strengthened in rayon villages.

Along with housing construction, we are successfully developing the entire sociocultural complex in Shushenskiy Rayon.

The conference comprehensively reviewed practical work experience in rebuilding the villages of Siberia and the Far East and outlined a specific plan of action to improve the planning and development of sovkhoz and kolkhoz settlements of these rayons, which are acquiring increasing importance in developing the nation's economy. A plan of measures to improve the comprehensive development and provision of rural settlements of Siberia and the Far East with public amenities has been worked out.

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Achievements of Siberian Construction

Moscow ZHILISHCHNOYE STROITEL'STVO in Russian No 12, Dec 81 (signed to press 4 Dec 81) pp 25-26

[Article by engineer K. V. Paremskiy (Central Administration of the Scientific and Technical Society of the Construction Industry): "Achievements of Construction Science for Siberia!"]

[Text] Success in carrying out the ambitious USSR long-range development plans, including those for regions of Siberia and the Far East, which were outlined by the 26th CPSU Congress depends in considerable measure on further development of and improvement in housing and civil construction in these regions.

It was to this very topic that the all-union conference "Perfecting Large-Panel House-Building in Regions of Siberia" held on 16-18 September 1981 in Novosibirsk was devoted.

The conference was organized by the USSR Gosstroy, Gosgrazhdanstroy [State Committee for Civil Construction and Architecture], Glavnovosibirskstroy and the central and Novosibirskaya Oblast boards of the scientific and technical society of the construction industry.

Taking part in the work of the conference were supervisory personnel of the USSR Gosstroy, the union republic gosstroys, the Gosgrazhdanstroy, the construction ministries and departments, the scientific research and planning institutes, leading specialists from the largest construction sites in Siberia and the Far East, the org-tekhstroys, the local construction organizations, representatives of the press, as well as foreign specialists from socialist countries (People's Republic of Bulgaria, Hungarian People's Republic, Polish People's Republic, Czechoslovak SSR).

Gosgrazhdanstroy deputy chairman and deputy chairman of the Central Administration of the Scientific and Technical Society of the Construction Industry Yu. M. Rodin gave the main report "On the Status and Direction of Development of Large-Panel House Building."

The speaker noted that during the 10th Five-Year Plan, 87.2 billion rubles was directed into capital investment, which was above planned assignments. This enabled us to build a total of 530 million square meters of housing space and to improve the housing conditions of more than 50 million people. In the 11th Five-Year Plan, the level of construction production industrialization will rise and the use of effective materials and technical resolutions and of local building materials will increase. This will enable us to improve capital investment effectiveness and reduce the labor-, materials- and energy-intensiveness of construction.

In analyzing the status of the KPD [large-panel house-building] industrial base, Yu. M. Rodin noted that, along with the achievements of many enterprises, there are also still definite shortcomings in the planning and construction of new enterprises and the renovation of existing ones, in mastering and using production capacities and in introducing the results of scientific research.

Speaking of the work of enterprises in Siberia and the Far East, Yu. M. Rodin focused the attention of the ministries and the leaders of main and territorial construction administrations, organizations and enterprises on the unsatisfactory use of capacities at a number of DSK's [house-building combines], KPD plants and KPD shops at reinforced concrete products plants in this region.

The local and oblast organizations of the scientific and technical society of the construction industry, primary organizations and all members of Siberian and Far Eastern enterprise, organization and construction site scientific and technical societies, must play a significant role in eliminating shortcomings. The experience of leading enterprises must be studied and disseminated more actively.

The report by SibZNIIEP [Siberian Zonal Scientific Research Institute of Modular and Experimental Residential and Public Building Design] director Yu. M. Kuzin analyzed the amount and structure of housing construction in Siberia, revealing steady trends towards quantitative growth and qualitative improvement in large-panel house-building. The tasks of further developing large-panel house-building in Siberian rayons on the basis of using scientific research done at SibZNIIEP were defined.

SibZNIIEP chief engineer V. P. Zonov dealt in his report on the specifications of the 111-97 housing series developed by SibZNIIEP; this will be the main series in Siberia. The institute is working on further improvements in this series, the purpose of which is to lower the cost of construction, reduce materials- and metal-intensiveness, reduce heat loss, reduce the labor-intensiveness of producing the components, as well

as of installing and erecting the housing, improve architectural-layout resolutions and improve operating qualities.

Glavnovosibirskstroy experience in developing large-panel house-building was the main topic of the report by Glavnovosibirskstroy first deputy chief G. I. Ratskevich.

The volume of KPD enterprise production is constantly growing at plants in Novosibirskaya Oblast. At the same time, work is underway on improving the layout and structural resolutions of large-panel houses, improving the architectural expressiveness of housing development, improving product quality and factory finish, and reducing labor expenditures and housing construction time.

Gosgrazhdanstroy administration deputy chief I. L. Zhivotovskiy dealt in his report with improving the technology of large-panel house-building which is taking on special significance in Siberian and Far Eastern rayons where higher rates of growth in housing and civil construction volume are planned.

The sections discussed questions of developing the house-building base, improving planning resolutions and improving the quality of large-scale large-panel house-building.

The basic thought sounded in many reports and communiqus at the conference was that accelerating scientific and technical progress in the field of large-panel house-building is the primary reserve for further developing housing and civil construction in regions of Siberia and the Far East.

As a result of industrialization of housing construction in regions of Siberia and the Far East, the proportion of fully prefabricated house-building has reached a high level in a number of cities: 91 percent in Surgut, 82.4 percent in Nizhnevar-tovsk, 79.7 percent in Nefteyugansk, 61 percent in Nadym and 52 percent in Tobol'sk.

Gosgrazhdanstroy institutes and RSFSR Gosstroy planning organizations have worked out special large-panel housing and public building plans for Siberia and the Far East.

However, as conference participants noted, there are still shortcomings and unsolved problems in planning and building new enterprises, renovating existing ones, introducing scientific research results, mastering and using production capacities and improving the quality of output and construction, in the field of large-panel house-building in Siberia and the Far East.

All-union conference participants adopted recommendations aimed at further industrializing housing and civil construction by developing and improving large-panel house-building, as the main technical direction corresponding to the features of construction in Siberia and the Far East.

The conference recommended that the ministries and department basically complete the change-over of their enterprises to producing and building houses on the basis of improved new standard plans and raise the technical level of construction in the 11th Five-Year Plan.

The conference recommended that all organizations of the scientific and technical society of the construction industry propagandize more extensively the leading experience

of construction organizations and assume the systematic monitoring of progress in implementing the recommendations, rendering organizations and enterprises the necessary assistance in carrying out the recommendations of the conference.

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House-building in Tyumen' Region

Kiev RABOCHAYA GAZETA in Russian 17 Dec 81 p 2

[Article by Ya. Smytsnyuk (Kupyansk - Sumy - Kremenchug): "You Don't Build A House Out of Promises"]

[Text] The "Ukrtyumenzhilstroy" construction-installation train has again been forced to dispatch three assemblers to related organizations, the Kupyansk, Kremenchug and Sumy house-building combines. Let us note that this is not the first time this has happened. Although this is just one trip, together with the average wage those sent out will receive, it will cost the train about 3,000 rubles. Expensive, but necessary. The quality of the reinforced concrete items being supplied to Noyabr'sk is poor, cars are sent out unevenly and the construction site lacks many parts. In order to at least "take in hand" these problems, if not solve them, the assemblers traveled 4,000 km.

Why such a mess? The Kupyanskiy branch of the Khar'kov house-building combine and the Kremenchug and Sumy combines renovated, or more precisely, were to have renovated the BAM-series lines in advance. Compressed schedules, delays by metallurgists in delivering killed steels -- this is the objective aspect of the sickly start the northern variant of the conveyors have made. But we still are unable to do without subjectivism everywhere. As of today, apparently only the Kupyanskiy branch is maintaining its reputation responsibly. Even though the "cubic [meters]" are slow in coming and even though there are interruptions in supplies of specialists, cement and crushed rock, it is delivering house parts to Noyabr'sk in the necessary sequence.

Let us emphasize once again: this is hard for them to do. Branch laboratory leader L. Samoylova and supply department head V. Provor explain the situation. For some time now, what must bluntly be called unbusiness-like relations have taken root between Kupyansk and the Balakleyskiy Cement Combine. While certainly aware of its partner's daily cement requirements and the potential capacity of its storage facilities, Balakleya persistently disrupts the flow of raw material, only to suddenly supply dozens of carloads. Cement quality has also been poor. Thus, on 24 October, a car arrived from Balakleya with its hatches full of clumps of unusable material. The Kupyansk workers broke them up with picks. But in vain, as it turned out. In the car, the cement was mixed up with a lot of alumina and lumps of mineral admixtures. After an investigation, the supplier still had the audacity to seek compensation in the form of a fine for the car's standing idle. But it still did not replace the cement, which was unusable on all counts.

Both metallurgists and rock-crushing plants often present us with such "surprises." But Kupyansk workers worked conscientiously nonetheless. During the first 10 months of this year, they shipped out 2,000 m³ of prefabricated reinforced concrete above the plan and in the proper mix.

Branch transport shop senior engineer L. Lichenko expressed a commonly held opinion in the collective: "Re-equipping capacities for the EAM series of houses finally happened, and the tempo of the past three months reached the designed capacity of the equipment. This will enable us to manage an even tauter program of deliveries to the North next year."

But the style of organization in Sumy is entirely the opposite. Here, the primary energy of the leaders is focused on wrangling more for themselves, rather than on fulfilling the northern program. The combine's chief machinist, V. Tyutyunnik recently sent V. Sofiychenko, chief of the republic Ministry of Industrial Construction's Glavpromstroymekhanizatsiya, another copy of a letter in which V. Kozin, acting chief of the house-building combine, referring to a decision by the ministry technical council, urgently requests "a decision to allocate" a whole series of production equipment, allegedly for a line for the North, although a reply sent to Sumy four months ago said: "According to the renovation plan, all the equipment has been ordered...."

Perhaps the combine was done out of its fair share anyway? You couldn't say that. Out of 15 items in the petition, only a single solitary one could sensibly be called essential. Those in Sumy want to get all of three more straightener-shearers for the fittings shop. The renovation plan anticipates two. One was received long ago, and another will be. But reference to its delivery should directed not at the ministry, but at the Khar'kovmashnabsbyt.

"The other one is simply not feasible," explains Glavpromsnab deputy chief A. Yarchuk. "Judge for yourself. In the 1960's, the republic mastered a new series of large-panel houses, the 1-464A. House-building combines equipped with four cartridge installations produced 35,000 cubic meters of prefabricated reinforced concrete per year. And the Sumy house-building combine has now been given two modern cartridge machines to renovate lines for the northern program, bearing in mind that they still have three of the old ones. In short, the designed capacity of the modern lines is 30,000. This year, Sumy workers must supply a total of 9,000 m^3 , and next year -- 18,000 m^3 . And they are requesting yet another cartridge. Plus it wants two tower cranes, one overhead crane, four suspended welding machines, three cement mixers, two batchers, two gross crushers...and a DN-21 exhaust fan, which is designed for a keramsite plant.

Besides the inordinate "appetite" of Sumy house-building combine leaders, they also have an overly-developed ability to dump their inefficiency onto the heads of others. The transport plan for shipping out sets of panels which was developed by "Ukrorgtekhstroy" institute specialists was incorrect, which is why parts have been shipped out to Noyabr'sk unevenly. So states house-building combine deputy chief V. Rogovenko. But at the same time, Kupyansk is working quite well using this same plan. Of course, it is far from perfect, but the plan's authors, together with practical workers, are constantly working to improve it. Gratifying advances are noticeable. But in Sumy, it turns out they did not even think of introducing this very plan.

Implausible? Surprising? No, natural. UkrSSR Ministry of Industrial Construction industrial enterprises administration deputy chief A. Maystro, who visited Sumy 14 times in the course of the year, did not succeed in finding out who is personally responsible for the northern program. Judging from everything, nobody is. And the results are that parts for a delivered house are shipped out to Noyabr'sk in the third 10-day period of November, rather than late July, as scheduled.

Or another example. Sumy house-builders have never been famed for manufacturing ventilation units on schedule. The same is true today. Some 256 such parts have not been shipped out for stock houses. The one form which is operational enables them to manufacture only four ventilation units a day. "What can we do? We don't have the capabilities..." say the Sumy workers, latching onto any excuse. We maintain that is not so. First, because the ventilation units of the BAM series are identical to others, so there is an opportunity to manufacture and deliver them on schedule. Second, under pressure from "expediters" at the house-building combine, the ministry still allocated them a second form for manufacturing these parts. But its fate is unenviable: for three months now, it has just sat. And no one knows when it will be installed. So much for references to so-called objective causes.

But neither can the real objective causes be disregarded. Republic metallurgy is severely retarding the smooth manufacture of KPD parts. As of 20 November, house-builders had not been provided with 1,170 tons of rolled metal in special brands. Kommunarsk metallurgists failed to deliver five carloads and Kramatorsk, Makeyevka and Dneprodzerzhinsk metallurgists -- one carload each. "Krivorozhstal" is indebted to us for 65 tons of thin loop-mill steel. The house-building combine cannot stand idle -- the plan presses. So the house-builders proceed to directly violate the plan by replacing small-diameter rolled metal with other, thicker metal. Hence, an overexpenditure of metal, which is also scarce. Kupyansk has been forced to operate using substitutes all this year. But still, it is operating. Things are worse in Kremenchug. Fedor Polishchuk has been a brigade leader in the No 3 house-building combine fittings shop for 15 years. He has a strong, tightly-knit collective. Prior to restructuring for the northern program, they were on the right flank, overfulfilling the plan month after month. But this year, they have been idle continuously. In November, they had a week off due to a lack of loop-mill steel. That means fitters in Noyabr'sk are now being forced to "take it easy."

"Ukrtyumenzhilstroy" leaders will send people to related organizations again and money will again fly north. And afterwards, there will again be disruptions. And this closed cycle will continue until such time as the republic Ministry of Industrial Construction and Ministry of Ferrous Metallurgy help subordinate enterprises carry out precisely the tasks set them. This and this alone is our guarantee of success, and not the useless efforts of expediters.

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CONSTRUCTION

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SARATOVSKAYA OBLAST CONSTRUCTION EFFICIENCY MANAGEMENT PROGRAM

Moscow EKONOMIKA STROITEL'STVA in Russian No 1, Jan 82 (signed to press 29 Dec 81)
pp 20-24

[Article by V. K. Gusev, first secretary of the Saratovskaya Obkom: "On the Basis of a Comprehensive System of Capital Construction Effectiveness Management"]

[Text] The scope of capital construction in Saratovskaya Oblast has increased significantly in recent years. This has required much work on improving production efficiency and the quality of the projects being built, on concentrating material and labor resources at them. As a result, 6.8 billion rubles in capital investment has been utilized this past five-year plan, a 26 percent increase as compared with the Ninth, and fixed assets totalling 6.4 billion rubles have been put into operation, 29 percent more than in the Ninth Five-Year Plan. The volume of contractor work was 4.3 billion rubles. Some 295 projects became operational, including new power capacities and large production facilities at enterprises of chemical industry, production space in machinebuilding plants, automotive and electrical engineering industry. Significant growth in capacities has been provided by renovating and retooling at enterprises of machinebuilding, light and food industry and building materials industry. A total of 6.4 million square meters of housing, new schools for 70,800 pupils, children's preschool institutions with space for 25,200 and planned trade, public catering and public health facilities were put into operation.

The rural construction assignments of the 10th Five-Year Plan were carried out in four years. Oblast kolkhozes and sovkhozes received two-fold more housing than in the Ninth Five-Year Plan. The rates of road construction were increased, with 2,000 kilometers of hard-surface road being put into operation.

Much reclamation construction work was done. Some 124,000 ha of irrigated land was put into operation, including more than 70 percent of it using large irrigation systems. Some 1.068 billion rubles [as published] in state funds was invested in land reclamation in the 10th Five-Year Plan, which was 60 percent more than in the Ninth. Capital investments in the construction of agricultural production and housing projects increased. Land reclamation work quality was improved.

Much attention is being paid here to strengthening the material-technical base of construction, to renovating and retooling branch enterprises. New capacities have been put into operation to produce prefabricated reinforced concrete, wall materials, brick and window glass.

The start-up of projects became more even, the speed with which projects were put up increased appreciably and many collectives have been coping with labor productivity growth assignments. The amount of unfinished construction decreased by one-third, reaching the normative level.

For ensuring the prompt start-up of important national economic projects, oblast construction workers received greetings from Comrade L. I. Brezhnev twice in the 10th Five-Year Plan.

We could give quite a few examples of good production and labor organization, of the precise interaction of all links, of precise material-technical supply organization creating opportunities for installing projects quickly.

This past five-year plan, "Nitron" association began building the country's largest acrylic acid nitrile production complex on the outskirts of Saratov. Five years was set aside for its installation. But since the output was much needed, a decision was made to shorten the schedule. How? Considerable human and material resources were concentrated at the construction site and constant work progress monitoring was set up. A staff acting in close concert with the party obkom bureau was created to coordinate the actions of construction participants. This permitted the fast, efficient solution of problems which arose, and there were quite a few. This important project was, after all, being built by 21 construction and installation organizations. The materials, components and equipment were being supplied by 86 enterprises. Things were often complicated by the fact that the complex was being created while production continued. In spite of the difficulties, the work was organized efficiently, installation, start-up and adjustment work were combined to the maximum, experienced specialists worked in the decisive sectors and extensive use was made of leading experience. As a result, the complex was built in three years. The project was not only released well-built, but reached planned capacity within a month. Participants in creating the complex were warmly congratulated by Comrade L. I. Brezhnev.

Of course, quite a bit of attention was also paid to improving capital construction efficiency in the past as well, but we were by no means always able to obtain the return we usually counted on. And it was all a matter of what seemed to be good measures sometimes not being coordinated. This is why the CPSU obkom bureau has in recent years adopted a policy of working out a comprehensive capital construction efficiency management system (KSUEKS). It is a complex of organizational-political, engineering and economic measures.

Relying on scientists, production organizers and specialists, the party obkom has worked out concrete steps aimed at improving construction production and management organization, making better use of the achievements of science, engineering and leading experience, ensuring high labor efficiency and work quality in all sectors of the construction conveyor. Questions of shaping the capital construction program, organizing production, its technical level and ideological support for plan fulfillment are in the center of attention of the primary party organizations, raykoms, gorkom and obkom. The oblast party committee has established strict supervision of observance of implementer discipline. Such an approach permits us to direct personnel activity more successfully. Realistic conditions are created for introducing the comprehensive capital construction efficiency management system, which anticipates concentrating material and financial resources and smooth work.

The bank has been a basic helper in this. Those organizations permitting the deflection of funds to other needs are denied all types of credit. And these sanctions are applied not after the start-up of a particular project has already been disrupted, but at the very start of construction.

Moreover, USSR Stroybank institutions have begun making broad use of penalty fines through state arbitration agencies for failure to meet contractual obligations, both for clients and for contractors. If projects become "long-builders," the bank only pays for work done and stops further financing. But when projects are included in the plan, they are promptly provided not only with funds, but also with technical documentation and are transferred to comprehensive material supply in accordance with plans and estimates. Thus, introduction of a precise system of capital construction management -- from planning to financing -- enables us to improve capital investment effectiveness and reduce the time needed to put projects into operation.

In developing capital construction plans, much attention is paid to determining the sequence in which projects are to be put up, the scheduled start and finish of the work, distributing contractor work by year, creating technological stocks, and establishing an optimum relationship between the calculated amount of contractor work and commodity construction output. The party obkom bureau approves steps to put the most important start-up construction projects into operation on time. This document is the basis of the activity of city and rayon party committees, primary organizations and economic leaders.

The builders' production program is more closely coordinated with the financial-economic indicators of economic activity. For example, the profit indicator has become not simply a derivative function of the commodity construction output created, but actively influences the distribution of assignments on putting capacities and projects into operation by quarter and forces construction organizations, together with clients, to seek out reserves for putting projects into operation on time.

What does this yield? In 1980 alone, capital investment volume per construction site increased an average of 42 percent. The number of projects being put up simultaneously decreased by nearly 1,700 as compared with 1978 and the proportion of funds being directed into start-up projects increased by 12 percent.

Oblast construction workers began the 11th Five-Year Plan in transition to the new management methods. The work of a number of construction organizations is now being evaluated not based on amount of funds utilized, but based on commodity construction output and putting capacities and projects into operation. The new management methods being used in construction are based on the practical experience of a number of construction subdivisions which first used them in their work in 1980.

As experience has shown, shifting organizations to activity planning and evaluation based on the indicator of commodity construction output has fully justified itself: the work of construction workers is focused only on attaining end results. We have also found resolutions which ensure greater capital investment effectiveness. In building large complexes, individual projects, personal-services premises, warehouses, garages, boiler rooms, compressor and auxiliary shops, dining halls, energy, water and steam utilities and administrative buildings are released for operation prior to completion of construction of the main projects of the complex if they can independently produce output or render services. In so doing, the client is able to

prepare and adjust the operation of his own rear economy in advance, which unquestionably has a positive impact on reducing the time involved in mastering capacities.

Work at the construction site depends largely on the effectiveness of socialist competition. Thus, the No 6 Trust masons brigade led by Honored Builder of the RSFSR P. Glukhov assumed an obligation this past five-year plan to build a total of 39,000 square meters of housing space. But it had already carried out this assignment successfully in three years. At the Saratov House-Building Combine, installers led by V. Gorbachev came forward with an initiative, "Fewer Personnel for the Five-Year Plan." While reducing the size of the brigade 1.5-fold, they still exceeded their assignments each year. Valuable initiatives have been generated by builders. They include the development of counter plans based on a brigade movement schedule and brigade loads throughout the year, brigade competition in the leading occupations to attain the best results, and comprehensive socialist competition at start-up projects.

More attention has also been paid to social questions. Good housing and personal-services conditions and a broad network of courses and schools have been created for builders. Each year, up to 15,000 workers improve their skills and more become workers with higher ratings. Five people's universities of technical progress have been organized. This has permitted the better manning of collectives.

Another aspect of the comprehensive capital construction efficiency management system is the improvement in construction planning and management. We need first of all to note here the effort to concentrate resources at the most important start-up projects. When plans are formulated, they are then discussed widely, with the involvement of the organizations concerned.

Experience has been accumulated in large collectives in using network schedule technological planning schemes and models. Network-schedule simulation permits operational tracking of the implementation of target tasks and programs and reflects construction technology at all stages.

A comprehensive plan for raising the technical level, efficiency and quality of capital construction up to 1985 is in effect in the oblast. It anticipates further industrialization of production, the introduction of new materials and components with a high level of factory finish, and introduction of leading work methods. As a result, the number of people at construction sites has been reduced by more than 6,000.

An important role in increasing the effectiveness of construction production is being given to introduction of the brigade contract. Brigade cost accounting has now become the basic method of organizing construction and management in the lower links of the branch. It is precisely this method that harmoniously combines the interests of the state, each collective and each worker. In fact, material and moral encouragement depend directly on the end results of labor, on putting projects into operation. Cost-accounting brigades significantly reduce normative work schedules, use materials economically and steadily improve labor productivity. In so doing, brigade cost accounting resists the growth in unfinished construction and the scattering of resources. It conforms completely to the primary goal of increasing capital investment effectiveness. In the course of perfecting this method, a new form of organizing such brigades with includes payment for end results was born in the Saratov House-Building Combine.

Still, if we critically evaluate what has been achieved, we need to note that the results could have been quite a bit better, had we succeeded in more quickly eliminating a number of major shortcomings. The fact is that several collectives failed to meet plan assignments, especially in terms of increasing labor productivity. This applies foremost to the Glavprivolzhskstroy and Glavsredvolgovodstroy. Some projects are, unfortunately, being put into operation in violation of normative schedules. One still encounters instances of poor work quality. Personnel turnover is high in certain organizations.

Having greeted the historical resolutions of the 26th CPSU Congress with enormous enthusiasm, the collectives of construction organizations of Saratovskaya Oblast are fully resolved to carry out the large, honorable tasks set capital construction in the current five-year plan. They are faced with putting into operation a number of important projects and capacities, among which are the first unit at Balakovskaya AES, a large broiler poultry farm, 145,000 ha of irrigated land and more than 2,000 kilometers of hard-surface highway. Moreover, large projects must be built in light, food, meat and dairy, mixed feed and other branches of industry. We are faced with putting about seven million square meters of housing and many children's preschool institutions, schools, hospitals and other sociocultural projects into operation. The amounts of rural construction will increase 1.5-fold. Even in the first year of the five-year plan, oblast workers have made many efforts to put start-up industrial, agricultural, cultural and personal-services projects and housing into operation ahead of schedule.

The 1982 construction plan anticipates the continued concentration of funds and a reduction in the number of projects being built simultaneously, the priority construction of enterprises of light and food industry, personal services, housing, children's institutions and other cultural and personal-services projects, and the renovation of enterprises yielding the fastest return. All proposals on building VUZ's, tekhnikums, vocational-technical schools and other schools and public-health projects have been accepted for execution.

Well-aware that the new five-year plan will, as Comrade L. I. Brezhnev stressed at the 26th CPSU Congress, be a serious test for builders, oblast construction workers are taking steps to concentrate their forces on the fastest possible completion and start-up of those enterprises capable of ensuring the greatest increment in output and loosening bottlenecks. And this is also what the comprehensive capital construction efficiency management system is also aimed at.

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CONSTRUCTION

NEW CLASSIFICATION OF FIXED PRODUCTION ASSETS PROPOSED

Moscow VESTNIK STATISTIKI in Russian No 2, Feb 82 (signed to press 27 Jan 82) pp 54-57

[Article by P. Vashkiv: "Several Questions of Perfecting the Classification of Fixed Production Assets of Branches of Industry"]

[Text] Under present conditions of scientific and technical progress, when the volume of fixed production assets is growing rapidly, one of the important tasks of perfecting planning and studying the effectiveness of social production is the development of a correct, scientifically substantiated classification of these assets which will anticipate distributing them among individual homogeneous groups which differ in physical-substantive composition, purpose, role in the production process and design and other criteria.

Let us note that the existing fixed production assets classification does not, in our opinion, meet these requirements. It does not always permit a detailed study of fixed assets from the viewpoint of their role in the production process and creates certain difficulties in technical-economic calculations when planning and researching indicators of enterprise technical equipment and the effectiveness of fixed assets use. In connection with the presence of consolidated groups in this classification, the technological structure of fixed assets cannot be determined sufficiently precisely by classification position in the form of the ratio of active to passive portion, nor can the branch origin and functional designation of these assets be adequately studied. For example, the "Buildings" group includes production buildings and structures occupied by shops, workshops and facilities carrying out production functions, as well as administrative-management buildings -- offices, warehouses, storage facilities, and so on. All objects included in this group are homogeneous in terms of branch origin; the group can be divided into two subgroups in terms of technological purpose: buildings occupied by production shops and buildings being used to service production -- administrative, warehousing, and others.

The "Installations" group includes, along with facilities providing production conditions (storage facilities, enclosures), primarily those facilities which essentially perform active fixed assets functions (the function of tools of labor): water facilities, gas and oil wells, mines, and others. All facilities in this group -- generally a result of construction-installation work -- have been manufactured primarily from materials which are products of ferrous metallurgy and building materials industry. In this sense, they are homogeneous, but they are diverse in terms of purpose and in physical-substantive composition. This group includes mining-drilling

installations (mines, quarries, wells and others), hydraulic facilities (dams, canals, dikes, and others), transport facilities (railroads and highways, trestles and others), and installations performing technical functions necessary to the production process (annealing furnaces, steam chambers) which, like the power and operating machinery and equipment, are essentially the active portion of fixed assets.

In our view, four subgroups should be singled out to delineate the composite elements of installations as a function of their functional purpose and branch origin: mining-drilling installations, hydraulic installations, transport installations, and installations performing functions necessary to the production process (smokestacks, storage facilities, enclosures).

The "Transfer Facilities" group is also far from homogeneous. Under the existing classification, it includes electric power transmission lines, heat and steam mains, water distribution mains, inside cement, oil and gas lines, and others.

Such an abundance of functionally diverse fixed assets elements in the groups of the existing classification hampers research on the ratio of active to passive portions, technological structure, branch origin and progressive trends.

The contemporary economic literature recommends a more detailed fixed assets classification than the existing one. In particular, the fixed production assets classification proposed by Doctor of Economic Sciences Ya. B. Kvasha deserves attention.¹ In our opinion, it basically meets the demands of studying fixed assets in terms of their technological purpose and branch origin, although there are certain shortcomings. First, the names of particular groups do not cover the entire range of objects included in it. Thus, the "Mining-Drilling and Hydraulic Installations" group does not include such installations as highways and railroads, storage facilities, settling tanks, enclosures, smokestacks and so on. These installations are not included in other groups in the proposed classification either. Second, the names of several classification groups anticipate combining objects which differ in terms of physical-substantive composition and purpose. The "Buildings and Storage Facilities" group, for example, includes various kinds of storage facilities, which we think is unjustified, since these objects differ not just in physical-substantive composition, but also in purpose. We think that storage facilities should be included in the "Installations" group to conform to the demands being made.

The fixed production assets classification proposed by O. I. Ibragimov² is also of definite interest. It relates transfer facilities, machinery and equipment and means of transport to separate groups, and quite justifiably, we think. But at the same time, the same shortcomings in the classification proposed by Ya. B. Kvasha are also inherent to this classification, in which fixed production assets cannot be distributed sufficiently precisely into homogeneous groups in terms of functional and technical-production purpose, nor can the structure of these assets be described sufficiently precisely as a function of their role in the production process.

¹Ya. B. Kvasha, "Statistika novoy tekhniki" [Statistics on New Equipment], Moscow, Izd-vo Statistika, 1966, pp 12-13.

²O. I. Ibragimov, article in the book "Voprosy statisticheskoy metodologii i statistiko-ekonomicheskogo analiza" [Questions of Statistical Methodology and Economic-Statistical Analysis], Moscow, Izd-vo Statistika, 1980, pp 157-158.

So both the existing fixed production assets classification and the indicated classifications require continued improvement. It seems to us that this improvement must be along the lines of distributing fixed assets into individual groups so that the classification can be used to resolve the following tasks: reveal the fixed assets composition from the viewpoint of the technological purpose of their individual elements, reflect their branch origin, ensure an opportunity to study the dynamics of the technical level of means of labor, and single out groups of fixed assets which are similar in terms of intensiveness of wear and service life.

Taking into account the role and purpose of individual fixed assets elements in the production process, we also think it necessary, first, that the following independent groups be delineated: "Power Machinery and Equipment," "Operating Machinery and Equipment," "Instrumentation, Testing and Control Machinery and Devices" and, second, that pipelines used to transfer liquids, gas and bulk materials over long distances be moved from the "Transfer Facilities" group to the "Means of Movement" group. The fact is that transfer facilities should, in our opinion, include only those types of fixed assets used to transfer various types of energy (above-ground and cable electric power lines, heat and steam mains, transmissions and others). Those types of fixed assets used to transfer liquid and gaseous substances from one facility to another are not energy carriers and should be included in means of movement.

In accordance with the above, we propose the following classification of fixed production assets of branches of industry.

Classification of Fixed Production Assets of Branches of Industry

- I. Buildings:
 - 1) occupied by production shops;
 - 2) used to service production (administrative buildings, warehouses and others);
- II. Installations:
 - 1) mining-drilling (mines, wells, quarries and others);
 - 2) hydraulic installations (dams, canals, dikes and others);
 - 3) transport (railroads, highways, bridges, trestles, other installations);
 - 4) installations performing functions necessary to the production process (smokestacks, storage facilities, enclosures and others);
- III. Transfer Facilities:
 - 1) to transmit electric power (above-ground and cable electric power lines);
 - 2) to transmit thermal power (heat and steam mains);
 - 3) to transmit mechanical energy (transmissions and others);
- IV. Power Machinery and Equipment:
 - 1) power-generating facilities transforming potential natural-resources energy into needed types of energy;
 - 2) power-generating facilities for changing the parameters of energy of the same type;
 - 3) energy receivers (electric motors, electric furnaces, lighting and others);
(From Group IV -- including automatic)
- V. Operating Machinery and Equipment:
 - 1) for machining (machine tools, drilling equipment and others);
 - 2) for heat treating (blast furnaces, open-hearth furnaces, drying and heating furnaces and others);
 - 3) for electrophysical working (electric arc devices and others);
 - 4) for electrochemical working (electrolytic baths and others);

- 5) for chemical treatment (reactors, solvents, autoclaves and others);
(From Group V -- including automatic)
- VI. Instrumentation, Testing and Control Machinery and Devices:
 - 1) instrumentation and testing devices and facilities;
 - 2) monitoring and control machinery;
(From Group VI -- including automatic)
- VII. Means of Movement:
 - 1) mover machines (conveyors, cars, locomotives, mobile cranes, battery-operated trucks and others);
 - 2) pipelines (for transferring various liquid and gaseous substances such as gas, water, petroleum, cement and others over long distances);
 - 3) motor transport rolling stock;
- VIII. Tools and Attachments (jackhammers, vibrators, spray guns and others).
- IX. Production Inventory and Appurtenances (multipurpose containers, workbenches and others).
- X. Office Inventory (furniture, typewriters and others).
- XI. Other Fixed Assets (libraries and others).

A classification set up this way for fixed production assets enables us to delimit buildings occupied by production shops and buildings used to service production, installations associated with developing mineral resources and using water resources, transport installations and installations performing technical functions necessary to the production process, to distribute transfer facilities into individual subgroups as a function of the type of energy being transmitted and the branch origin of the means of transport, and to delineate in the operating machinery and equipment group subgroups relating to methods of their action on subjects of labor and to their branch origin.

The proposed fixed production assets classification scheme consists of 11 groups and 22 subgroups and can be used to gain a clearer idea of the technological structure and ratio of the active and passive portions of fixed assets, to reveal the proportions among portions of fixed assets being reproduced by machinebuilding branches (IV, V-1.3, VI, VII-1.3, VIII, IX) and branches of building materials industry and ferrous metallurgy (I, II, III, V-2, VII-2). The number of positions in it and the principles for systematizing the groups correspond to the tasks facing statistical study of the structure and effectiveness of fixed production assets use in branches of industry at the present stage.

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METALWORKING EQUIPMENT

UKRAINIAN SSR MACHINEBUILDING TASKS IN 11TH FIVE-YEAR PLAN

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 12, Dec 81 (signed to press 10 Dec 81)
pp 3-13

[Article by UkrSSR Gosplan department chief I. Kalinechenko: "Development of Machine-building in the 11th Five-Year Plan"]

[Text] The resolutions of the 26th CPSU Congress anticipate the transfer of the nation's economy to a path of intensive development. The primary factor in intensifying the national economy is the accelerated practical introduction of scientific and technical achievements. An important role in accelerating technical progress has been given to machinebuilding, the basis of retooling the national economy. CPSU Central Committee General Secretary L. I. Brezhnev noted in the CPSU Central Committee Accountability Report to the 26th Party Congress that "...it is first of all machinebuilding that can open wide the door to innovation. Machinebuilding is called upon to master without delay advances developed by scientific and engineering thought, to embody them in highly efficient, reliable machines, devices and technological lines."

The party has always attached much significance to the outstripping development of machinebuilding. In the Ukrainian SSR, this branch was developed considerably faster than republic industry as a whole in the Ninth and 10th five-year plans. Machinebuilding's proportion of republic industrial production increased from 24.4 percent in 1975 to 29.8 percent in 1980. During the 10th Five-Year Plan, this branch provided more than 54 percent of the increment in output and more than 61 percent of the increment in labor productivity in industry. Machinebuilding plants produce a significant proportion of the consumer and household goods.

Republic machinebuilders have also done considerable work to raise the technical level of the output being produced. The proportion of output in the highest quality category (that awarded the state Badge of Quality) has risen from 14.5 percent in 1975 to 36.3 percent in 1980. The production of equipment with higher unit power has increased, reaching more than 20 percent of all machinery produced in 1980. Khar'kov Turbine Plant steam turbine maximum power indicators increased to one million kilowatts and those for "Zaporozhtransformator" production association power transformers increased to 1.250 billion kilovolt-amperes.

Products are being updated quickly. In 1980, the value of new items mastered during the 10th Five-Year Plan was about 44 percent of all output. The price per useful impact of machinery and equipment dropped. Over the last 10 years, the price of

control computer complexes produced in the republic per average productivity (operations per second) dropped 37:80-fold, of semiconductor power devices -- 2.5:4.4-fold, of electrolysis and galvanizing production transformers with a nominal current of 25,000 amperes -- 2.6:3-fold. Considerable work has been done to reduce both the specific metals-intensiveness of machinebuilding output and metal expenditure norms for it. During the 10th Five-Year Plan, machinebuilding enterprises lowered the specific expenditure of rolled ferrous metals 21.3 percent and provided a total savings of 4.2 million tons of metal, including 2.4 million tons by lowering rolled metal expenditure norms. The reduction in the specific expenditure of rolled metal was facilitated by improvement in the branch structure of machinebuilding. As was anticipated by the 25th CPSU Congress, tool-making, machine-tool and electrical engineering industry and chemical machinebuilding were developed at accelerated rates.

Net cost has dropped each year in machinebuilding and metalworking; the reduction in expenditures per ruble of commodity output was 5.9 percent over the last five years and profits increased.

In the 10th Five-Year Plan, the production potential of machinebuilding increased significantly. Fixed production assets in the branch increased 51 percent, the active portion increasing 55.2 percent. The proportion of progressive metalworking equipment such as forging-pressing machines, automatic and semiautomatic machines in all technological groups, and preset-control equipment increased.

Machinebuilding ensured growth in the availability of energy to labor in agriculture of more than 1.4-fold per hectare and nearly 1.6-fold per worker this past five-year plan. The average tractor power in agriculture rose 16 percent in the five-year plan, the availability of machinery to labor in construction -- 41 percent. In industry, the number of mechanized flow lines increased 1.2-fold, the number of automated lines -- 1.5-fold, and the number of comprehensively mechanized and automated sectors, shops and production facilities -- 1.3-fold.

Continued outstripping development of machinebuilding and metalworking is anticipated for the 11th Five-Year Plan. The rates of increment in branch output will be 1.4-fold higher than for industry as a whole.

The basic indicator of production intensification is labor productivity growth. It also describes the use of labor resources, the increment in which will be significantly reduced in the 1980's. Under these conditions, machinebuilding enterprises must provide the entire increment in output without increasing the number of workers, that is, through labor productivity growth. Over the past five years, more than 70,000 people were transferred to mechanized labor in republic machinebuilding and the proportion of those employed at such labor has risen from 53.6 to 56.8 percent.

Machinebuilding must ensure considerable labor productivity growth not only in its own branch, but also in all branches of industry and the national economy. The task of qualitative growth in machinebuilding output, ensuring the most progressive structure of machinery and equipment release, has moved to the fore. The means of production being developed and utilized must correspond to the highest technical level and new machinebuilding output must be released with the state Badge of Quality, and the proportion of output in the highest quality category is to be increased from 36.3 to 44.1 percent.

The structure of the tools of labor being produced must be improved by increasing the release of interlinked complexes of equipment and machine systems, through outstripping growth in the production of machines with higher unit capacity, equipment for materials- and energy-saving technology, means of automating production processes and control, and machinery and equipment permitting a significant increment in labor productivity. The demand for machinery and equipment to mechanize and automate production in all branches of the national economy, of machinery and equipment to eliminate manual and heavy physical labor, must be better met. In particular, this applies to the base branches of the fuel-energy complex, to mining and metallurgical industry, chemical industry, the agroindustrial complex and transport.

Machinebuilders must accelerate the actualization of those achievements of science and engineering which provide an opportunity for achieving fundamental changes in the rates of labor productivity growth and the more complete and economical use of energy and material resources. Lowering the price of machinery and equipment per unit of useful impact remains an indispensable requirement.

The level of demand as to completeness of equipment being supplied and as to meeting delivery schedules is rising. One of the most important indicators now being used to evaluate the activity of the production collective is plan fulfillment in terms of output delivery in the products list and within the schedules in agreements concluded and orders placed.

The collectives of republic machinebuilding enterprises and organizations are participating actively in carrying out major comprehensive programs. They are faced with creating more than 3,000 new equipment models and mastering the series production of about 2,700 during the five-year plan. The release of equipment for thermal, hydroelectric and nuclear power plants is increasing, including turbines and other equipment for 750,000-, 1,000,000- and 2x750,000-kW power units. The release of equipment for progressive and new technological processes, as well as higher unit-capacity equipment for metallurgy, mining and chemical industry and transport, is being increased. Equipment is being developed to roll parts and for continuous blank casting and powder metallurgy.

Quarry excavators with scoop capacities of 20 cubic meters, rotary complexes with a productivity of more than 5,000 cubic meters of earth per hour, 130- and 250-ton installations for vacuum melting steel outside furnaces, oxygen converters with 160-350-ton base blow-through and 1.5- to two-fold higher productivity than existing ones, two-section 8,000-hp diesel locomotives and four-section (12,000-hp) diesels will be developed and put into production in the republic and the production of specialized railroad cars will be expanded. We need to improve the technical-economic specifications of diesel motors and increase the motor resource by 30 percent, significantly expand the production of means of mechanizing and automating warehousing, lift-transport, loading and unloading work, and organize the series-release of automated manipulators (industrial robots) to service warehouses, conveyors and heavy equipment. The release of equipment for 100- to 120-atm (abs) gas-pumping units, sets of equipment to produce 400,000 to 600,000 tons of weak nitric acid per year and 500,000 to 600,000 tons of ethylene per year will be mastered.

Electrical engineering industry is producing turbogenerators with unit power of one million kilowatts, and it has set up the production and is making deliveries of high-voltage electrical equipment for the super-large 1,500-kV d.c. Ekibastuz - Center and 1,150-kV a.c. Ekibastuz - Urals electric power transmission lines. Ore-mining, oil,

coal, metallurgical and other branches of industry, agriculture and rail transport will be receiving progressive new-design specialized electrical devices and equipment complexes. Considerable work will be done on increasing the efficiency of electrical equipment, further improving its technical-economic level and lowering its metals-intensiveness.

In automotive industry, we must accelerate the change-over of trucks to diesel engines and must raise the technical level and improve the economy of gasoline engines. We will be producing new and larger buses and will begin producing a new front-wheel drive "Zaporozhets" passenger car with a liquid-cooled engine. The production of lift trucks and ball bearings will be further developed. We need to improve the quality and increase the amount of services to operating and servicing means of transport belonging to the populace.

In machinebuilding branches serving agricultural production, work will continue on development of a system of machinery for the comprehensive mechanization of this type of production. The task of lengthening the service life and reliability of the equipment being produced will become increasingly urgent here. The service life of tractors prior to initial major overhaul must be increased to at least 6,000 to 8,000 hours, and the period of trouble-free operation — to 300-500 engine-hours. Agricultural machinery used for brief periods must operate without major overhauls throughout its service life and must operate trouble-free for an entire season. The power of the KHTZ [Kharkov Tractor Plant] series-produced tractor must be increased to 200 hp. The republic is faced with mastering the production of more than 60 different pieces of agricultural machinery and ensuring a 15-16 percent rise in the level of comprehensive production mechanization in stockraising and poultry raising.

We need to create new types of automated flow lines whose productivities are several times that of existing lines for light and food industry. The new equipment must also ensure a rise in the level of comprehensive production mechanization and automation and a reduction in losses of agricultural raw material during processing, storage and delivery to the consumer.

Significant structural changes will occur in machine-tool industry, the heart of machinebuilding. The basic task of this branch is to effect a qualitatively new stage in improving the structure of the equipment being released, raising its technical level and, on that basis, developing the introduction of progressive technology and highly-effective methods of labor organization into machinebuilding on a broad front. The production of forging-pressing and foundry equipment, especially automated equipment, numerical preset control units and complexes with automated manipulators, will grow at outstripping rates. The proportion of special and specialized machine tools, automated lines for machinebuilding and metalworking, automatic and semiautomatic units in all technological groups and machine tools with numerical preset control, will be increased in machine-tool equipment. The release of automatic manipulators and robotized machine-tool complexes will increase rapidly. The productivity of the new machine-tool equipment will be increased 1.3-fold, as will the reliability, durability and precision. The scale of production of high-quality machine tools, including those with wear-resistant coatings, abrasive tools and tools made of the new superhard materials, will be increased.

We anticipate a continuing rise in the technical level of computer equipment and automation devices and means on the basis of the latest achievements of microelectronics, electronic optics and laser engineering. The proportion of output in the

highest quality category must exceed 70 percent. The volume of production of instruments, means of automation and computer equipment is to be increased at least 1.4-fold, and outstripping rates of development are anticipated for computer peripheral equipment and actuating mechanisms.

Special note should be made of the interbranch problem of robotizing production on a base of increasing the release of equipment and automated manipulators with numerical preset control, which will open up a new stage in automation enabling us to free man from monotonous and difficult work and work under unfavorable conditions, to perfect comprehensive automation of production processes and the equipment shift index. Based on experience already available in using automatic manipulators, we can now automate jobs being done by multipurpose equipment. Each branch of machinebuilding must manufacture such manipulators to complement its own equipment and meets its internal demand for manipulators, as well as the needs of branches it serves. However, the leading role must be played by machine-tool building, instrument-making, electrical engineering and radio electronics. They must develop and master the production of standard sets of equipment for robot engineering: hydraulic, pneumatic and electric drives, means of preset manipulator and robotized complex control.

Machinebuilding branches have been set higher assignments on increasing the production of consumer and household goods. The production of household appliances with new functional designations, high reliability and economy of operation, improved consumer and aesthetic properties and greater convenience will be developed faster.

Machinebuilding enterprises are operating with limited metal allocations. During the five-year plan, a reduction in expenditure numbers must be ensured as follows, on average: rolled ferrous metals -- 18-20 percent, steel pipe -- 10-12 percent, rolled nonferrous metals -- 9-11 percent. The rolled metal use coefficient must be increased by several points. According to the "Materials-Intensiveness" comprehensive program worked out by the republic, a total savings of ferrous metals of more than four million tons must be ensured during the five-year period, relative to 1980. The machinebuilding branches have been set assignments on reducing expenditures of fuel and energy resources.

In order to ensure the savings in metal and higher labor productivity, much importance is being attached to further improving billet production, to replacing technological processes based on metal cutting with economical methods of shaping parts. We need to expand the use of special methods of casting and welding, of powder metallurgy, electrosmelting and milling parts.

Many republic casting and welding production facilities are very obsolete and require radical retooling to improve the quality and precision of the blanks, parts and subassemblies being produced, to mechanize and automate technological processes, to improve working conditions and carry out environmental protection measures. Much can be done by the enterprises in cooperation with republic scientific institutions.

Fundamental improvement in technical servicing and centralized company equipment repair and better meeting the national economy's spare parts requirements are important questions in machinebuilding development. Machinebuilders must also ensure the adjustment, servicing and repair of customer equipment. Enterprises of the Ministry of Chemical and Petroleum Machine Building have gained positive experience in delivering and adjusting complete sets of equipment and enterprises of the Ministry of Machine Tool Industry -- in servicing press equipment, and so on. The ministries

are currently taking steps to fundamentally improve the centralized servicing and repair of equipment in light of the available experience. To do this, we are organizing specialized all-union industrial and production associations and a network of local organizations and enterprises for them. Thus, we have set up the "Soyuzstankoremnaladka" VPO [all-union production association] and the republic has created the "EVIservis" production association for the centralized servicing and repair of computer equipment.

Machinebuilders also face the task of improving the use of their own production potential. Each enterprise must achieve a higher equipment operation shift index, overcome the drop in return on capital at a number of enterprises and individual branches of machinebuilding, and work out and implement steps to improve it. Labor productivity growth assignments, assignments on raising the technical level and improving the quality of products, and assignments on improving the use of labor, material and financial resources and fixed assets are considerably more taut in the 11th Five-Year Plan than they were in the 10th.

Actualization of these assignments will require a closer bond between science and production, not so much in developing new products as in working out more effective machinebuilding technology and carrying out plans for retooling production and raising the level of production organization. The level of demands as to the operation of branch planning-design and technological organizations will therefore rise. They must ensure the development and faster utilization of new output at the very highest technical level. "Conformity to the best world and domestic models -- we cannot and must not consent to anything less," L. I. Brezhnev stressed at the 26th CPSU Congress.

Technological potential concentration in the form of organizing large branch technological centers such as the VNIITElektromash in Khar'kov and the All-Union Institute of Transformer Building in Zaporozh'ye has justified itself. Organizing intrabranch specialized own machine-tool building and the production of special technological equipment is an effective way in which to accelerate technical progress in technology which has justified itself in a number of branches such as automotive, electrical engineering and electronics industry.

Further development of industry ties with institutes of the UkrSSR Academy of Sciences makes a large impact, already having created significant reserves in the fields of technology, structural and instrument materials and lubricant-coolant liquids. The fact that a number of low-tonnage technologies problems have been solved is important, as that enables machinebuilding associations and enterprises to introduce them themselves.

Power and chemical machinebuilding, electrical engineering industry, machine-tool and instrument manufacturing and the production of machinery for stockraising and feed production are being developed at outstripping rates. We have outlined renovation of the Voroshilovgrad Diesel Locomotive Plant and start-up of the first line of an electric motors plant in Uzhgorod. New enterprises will be built and existing ones expanded when the problem cannot be resolved through renovation and retooling. Among such projects, we should note the Dneprodzerzhinsk Actuating Mechanisms Plant, the plant to produce super-powerful transformers in Zaporozh'ye, the bearings plant in Lutsk, and construction of a number of agricultural machinebuilding projects.

Improving labor and management organization is an important factor in intensification. Steps to improve capital construction and production organization and planning,

to develop cost accounting and strengthen the role of economic levers and incentives, were set out in the CPSU Central Committee and USSR Council of Ministers Decree "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Improving Production Efficiency and Work Quality" and in the materials of the 26th Party Congress. Much strained work faces us in implementing these measures in each collective. The development of counter plans, intensifying thrift procedures, using the indicator of normative net output in planning and evaluating the results of economic activity, changing over to the brigade form of labor organization and wages, utilizing new forms of capital construction planning and interrelationships with contractors, expanding the rights of production collectives and strengthening economic incentives for end results are already being introduced into machinebuilding.

Many collectives have considerable positive experience in intensifying production, and the comprehensive use of that experience by other enterprises could substantially accelerate and ease their operation.

A number of progressive new initiatives aimed at raising the technical level of production, increasing consumer goods production, improving the use of resources, carrying out the five-year plan ahead of schedule and providing the entire increment in output without increasing the number of workers have been generated in leading collectives in the 11th Five-Year Plan. The Central Committee of the Ukrainian Communist Party has approved an initiative by collectives of agricultural machinebuilding enterprises, scientific and design organizations on accelerating the production and raising the technical level of machinery and equipment for stockraising which is made at the "Zavod 'Arsenal'", "Tochelektropribor" and "Elektronmash" production associations, and also to increase consumer goods production and expand the assortment of items in demand at least 1.5- to 1.8-fold during the five-year period.

Armed with the resolutions of the 26th CPSU Congress, branch workers have developed socialist competition to carry out the 1981 plan and the 11th Five-Year Plan under the slogan of intensifying production and economy procedures. The branch has met the plan for the first half of the first year of the five-year plan in terms of its basic indicators. However, there are still such shortcomings as individual enterprises' failing to meet plans for production, deliveries of the required products lists, capital construction and new equipment assignments.

There are large contingents of highly skilled specialists, workers, engineering-technical personnel and scientists, at machinebuilding enterprises and in scientific research, planning-design and technological organizations. They are fully resolved to make a worthy contribution to resolving the tasks set by the 26th CPSU Congress for machinebuilders, to persistently eliminate shortcomings and make maximum use of the production potential, labor upsurge and experience of the leading collectives.

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METALWORKING EQUIPMENT

IMPACT OF NEW WHOLESALE PRICES ON UKRAINIAN SSR MACHINEBUILDING OUTPUT

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 12, Dec 81 (signed to press 10 Dec 81)
pp 33-38

[Article by Candidate of Economic Sciences T. Alferova, UkrNIItsen department head, and V. Kotko, UkrSSR State Price Committee department head: "Perfecting Wholesale Prices for Machinebuilding Output in the Republic Products List"]

[Text] In light of the resolutions of the 26th CPSU Congress, the problem of perfecting price formation has assumed particular urgency. The necessity of reviewing the wholesale prices for machinebuilding output which have been in effect since 1973 results from the fact that their long use, given the high level of product updating and the substantial changes which have occurred in branch operating conditions, has led to a significant divergence of wholesale prices from their expenditure base, resulting in the appearance of numerous items made at a loss, as well as to output with an unjustified high profitability. Currently, about 10 percent of the machinebuilding output in the republic products list is produced at a loss, and more than a quarter of all the machinery and equipment released has an actual profitability 1.5- to two-fold in excess of the established normatives.

The development of new wholesale prices for machinebuilding output and instituting them as of 1 January 1982 performs the following tasks: recording in the new prices the assignments set for lowering output net cost, ensuring an economically substantiated relationship of prices for interchangeable and analogous types of output, the creation of conditions for further perfecting the cost-accounting activity of associations and enterprises and carrying out plans in terms of output products list.

To these ends, the normative of profitability in industry is anticipated to be 12-15 percent (of production assets), differentiated by branch. As a result of the review, wholesale prices for machinebuilding output in the republic products list are being increased 5.4 percent. An analysis made during this review showed that the change in wholesale prices for machinery and equipment was influenced by the following main factors: the rise in wholesale prices and rates for raw and other materials, fuel and electric energy, as well as social insurance deduction norms; the reduction in net cost due to improvement in labor and materials expenditure norms to reflect labor productivity growth; changes in total profits in prices due to the establishment of profitability at the normative level, as well as changes in the basis for planning profit in wholesale prices.

An evaluation of the degree of influence each factor has on change in prices for the 27 machinebuilding output wholesale price lists for the republic products list as a whole showed that the necessity of recording in machinery net cost the objective increase in the cost of output which has occurred in related branches, and first of all in the raw material and energy branches, had a definite effect on the increase in wholesale prices. When evaluating the overall rise in prices at level 1, the relative factor for the impact of these factors on increasing costs was +1.44, and the relative factors for changes in net cost and profit were -0.3 and 0.14, respectively. In recent years, there has been a significant reduction in the net cost of many types of machinery and equipment, which has had a dominant effect on shaping the level of wholesale prices and has permitted a reduction in them. Thus, as of 1 January 1982, wholesale prices have been lowered for electric illumination fittings, low-voltage electrical devices, chemical equipment, garage equipment, rebuilt automotive parts and subassemblies, and so forth.

Wholesale prices for machinebuilding output were improved on the basis of using new methods principles which first of all concern the shaping of profit in the planned price, as well as the development of the indicator of (normative) net output.

As is known, when wholesale prices were set for machinebuilding output in the past, profit was included in proportion to full net cost. The proportion of materials expenditures in the full net cost of this output averaged about 65 percent and fluctuated for many groups of items, so the indicated method, by being objectively concerned with producing more materials-intensive items, retarded saving raw and other materials. At present, profit in wholesale prices is being planned in proportion to net cost, deducting direct material expenditures, including the cost of raw and other materials, fuel and energy for technological purposes, as well as purchased items and semifinished products.

As a result of the review, the planned profitability of machinebuilding output relative to net cost and deducting direct material expenditures is 37 percent for the 27 republic price lists as a whole. In a cross-section of individual price lists, the profitability normative drawn up on this basis fluctuates within broad limits, from 20 percent for tanning equipment to 72 percent for cable items, which reflects substantial peculiarities in shaping the necessary profit among the branches, differences in the machinery and equipment net cost structure, and is also a consequence of the methods being used to calculate profitability normatives.

A generalization of the results of the review of wholesale prices showed significant positive changes resulting from improvement in the methods of determining profitability in prices. The established profitability normatives now take into account more precisely the cost-accounting conditions of branch operation and have practically eliminated repeat calculations and profit superposition in prices for complex machinebuilding output, which has created a base for lowering prices on a number of types of output.

At the same time, there are still a number of methodological questions requiring further development. The profitability normatives relative to net cost and deducting direct material expenditures which have now been established are differentiated substantially in terms of price list. Under these conditions, one can observe the cost-accounting interests of specialized enterprises of one branch when they produce output themselves.

Thus, the determination of profitability normatives in prices for river ships and ship equipment (price list 20-02-02) was made with consideration of the cost-accounting interests of specialized enterprises of the UkSSR Main Administration of the River Fleet and the profitability normative in prices for movie-making equipment (price list 28-01-02) produced by enterprises of the UkSSR State Committee for Cinematography was calculated with consideration of the profit they need. However, it is known that machinebuilding enterprises produce numerous types of output in various price-list groups in an overwhelming majority of cases. In such instances, it becomes especially important to substantiate the profitability normative differentiation in prices. A special study of this question showed that inter-pricelist fluctuations in profitability normatives relative to net cost and deducting direct material expenditures result not only from the specifics of shaping the necessary profit in the branches and the features of their commodity release structure, but also that existing methods of setting profitability normatives in price-list prices have a substantial impact on substantiating the quantitative values of profitability normatives. In order to set normative profit in terms of a price list, we presently use a price calculation indicator needed for normal profit on enterprise cost-accounting activity (PO). The value of the latter takes into account the necessity of ensuring total payments for production assets, interest on credit, other payments to the budget and the formation of economic incentives funds.

When a branch is narrowly specialized, the profit used in calculating profitability normatives in prices for specific types of machinery is determined by totalling the corresponding indicators for manufacturing plants as a whole.

$$\Pi_0 = \sum_{k=1}^N \Pi_{3k}$$

Further, the price profitability normatives are themselves calculated using formulas:

$$R'_k = \frac{\Pi_0}{\sum_{i=1}^N C'_k} \cdot 100$$

or $R''_k = \frac{\Pi_0}{\sum_{i=1}^N (C'_k - M'_k)} \cdot 100$

where Π_{3k} is the profit needed for cost-accounting activity of the k-th plant; C'_k is the number of enterprises in the branch, C'_k is the net cost of producing machinery in the i-th price list at the k-th plant, M'_k are direct material expenditures on producing machinery at the k-th plant, R'_k is the profitability normative relative to net cost based on the i-th price list and R''_k is the profitability normative relative to net cost minus direct material expenditures based on the i-th price list.

In practice, however, each plant generally produces dozens of types of machinery belonging to different price lists. Therefore, the bulk of the normative profit based on the price list consists of portions of enterprise needed by enterprises for normal cost-accounting activity. In this connection, profitability normatives are calculated as follows, by price-list group:

$$R'_k = \frac{\sum_{k=1}^N a'_k \Pi_k}{\sum_{k=1}^N C_k} \cdot 100;$$

$$R''_k = \frac{\sum_{k=1}^N a'_k \Pi_k}{\sum_{k=1}^N (C'_k - M'_k)} \cdot 100,$$

where a'_k is a coefficient showing what portion of the profit needed by the k -th enterprise must be provided by releasing output on the i -th price list.

As our experience in reviewing wholesale prices demonstrated, the principle of structuring the above-named coefficients is of fundamental importance. In a number of instances, the volumes of needed profit calculated for enterprises are even distributed based on machinery price-list groups to determine normative profit based on price lists in proportion to the share of the net cost of their release in plant commodity release net cost. Then, to calculate the profitability normative in wholesale prices for output on a specific price list, the total profit thus determined is summed up and related to another base, net cost minus direct material expenditures.

Thus, current methods of distributing profit needed by branches when calculating normative profit based on price lists and methods of setting profitability normatives in prices are inadequately interlinked. As a consequence, given different proportions of material expenditures in machinery net cost, different profitability normatives are formed relative to net cost minus direct material expenditures. This can reduce the effectiveness of this progressive new method of setting price profitability normatives and, given the existing differentiation of profitability normatives, can generate different profitabilities for manufactured items in terms of profit per ruble of own expenditures at the same plant.

In order to ensure equal profitability of machinery in terms of profit, we need to do more to equalize the values of profitability normatives relative to net cost minus direct material expenditures. To this end, it is appropriate when determining total normative profit for the i -th price list as a base for distributing the profit needed by enterprises for cost-accounting activity to use not the indicator of i -th price list output net cost at a given plant, but the indicator of net cost minus direct material expenditures. In this instance, the coefficient cited above, a'_k will be determined using the formula:

$$a'_k = \frac{C'_k - M'_k}{C\Pi_k - M\Pi_k}$$

where $C\Pi_k$ is the net cost of commodity release by the k -th plant; $M\Pi_k$ are direct material expenditures in k -th plant commodity release net cost.

We made a comparative analysis of the results of calculating normative profit for two variants of price lists: I -- determining normative profit for the price list by distributing the profit needed for enterprise cost-accounting activity in proportion to the net cost of the price-list output; II -- determining normative profit for

Variant Calculations of Price Profitability Normatives for Output Produced by UKSSR Ministry of Motor Transport Machinebuilding Enterprises

(1) Наименс и номер профескуранта	(2) Себестоимость товарной продукции (тыс. руб.)	(3) Себестоимость за вычетом прямых материальных затрат (тыс. руб.)	Variant I		Variant II	
			(4) Нормативная прибыль по прескуранту (тыс. руб.)	(5) Нормативная прибыль рентабельности в ценах на продукцию предскуранта	(6) Нормативная прибыль по прескуранту (тыс. руб.)	(7) Нормативная прибыль рентабельности в ценах на продукцию предскуранта
(9) Оборудование грузоподъемное и транспортирующее (19—06—02)	50,2	10,9	6,79	11,5	53,12	3,06
(10) Кузова, фургоны и другие изделия на шасси автомобилей (21—02—02)	3933,7	954,2	453,68	11,5	47,55	268,50
(11) Оборудование и приспособление гаражные (24—04—02)	2650,3	1143,7	305,67	11,5	26,73	321,83
(12) Агриматура и оборудование санитарно-техническое (24—07—02)	16,2	4,6	1,87	11,5	40,65	1,29
(13) Оборудование коммунальное (24—10—02)	104,7	78,0	12,06	11,5	15,49	21,95
(14) Жалитательный ремонт автомобилей (26—02—02)	14570,3	47358,1	13213,77	11,5	27,-	13326,29
(15) Восстановительные узлы и детали к автомобилям (26—07—02)	647,6	443,7	74,69	11,5	16,83	124,85
(16) Машиностроительная промышленность (29—10—02)	8,2	2,6	0,95	11,5	36,54	0,73
(17) Всего по 8 прескурантным группам	121981,2	49995,8	14068,50	11,5	28,1	14068,50
						11,5
						28,1
						59,0

Key:

1. Name and number of wholesale price list
2. Commodity output net cost (1,000 rubles)
3. Net output minus direct material expenditures (1,000 rubles)
4. Normative price-list profit (1,000 rubles)
5. Price profitability normative for price-list output
6. In percent of net cost
7. In percent of net cost minus direct material expenditures
8. Proportion of direct material expenditures in output net cost (percent)
9. Lift-transport equipment (19-06-02)
10. Bodies, vans and other vehicle chassis parts (21-02-02)
11. Garage equipment and accessories (24-04-02)
12. Sanitary engineering fittings and equipment (24-07-02)
13. Municipal services equipment (24-10-02)
14. Vehicle major overhaul (26-02-02)
15. Subassemblies and parts for rebuilding vehicles (26-07-02)
16. Machine-building production (29-10-02)
17. Total, for eight price-list groups

the price list by distributing the profit needed for enterprise cost-accounting activity in proportion to the net cost of price-list output minus direct material expenditures.

As is evident from the table [previous page], based on normative profit volumes, the normative profitability average, by price-list group, fell at 11.5 percent relative to the net cost of producing the machinery and at the 28.1 percent level relative to the net cost minus direct material expenditures.

Given distribution of the needed profit in proportion to net cost (variant I), the profitability normative relative to net cost minus direct material expenditures, by price list, fluctuated between two- and three-fold. This relationship of price profitability normatives creates the different profitability of manufacturing output for the enterprise. Moreover, substantial fluctuations in normative profit, by price list, relative to own expenditures makes it more difficult to increase the stimulus role of prices, inasmuch as even given high-quality, efficient machinery, price profit can be increased a maximum of 1.5- to two-fold for the purpose of stimulating production, under the existing statutes.¹

As is evident from the table, profit distribution proportional to net cost minus direct material expenditures (variant II) indicates the possibility of shaping a single profitability normative calculated relative to net cost minus direct material expenditures and ensuring equal profitability of manufacturing machinery in various price-list groups. In this regard, the deviations in profitability normatives, by price list, relative to net cost from the group-average level are substantiated, as they are accurately linked to the proportions of direct material expenditures in net cost.

Thus, when shaping price profitability normatives for machinebuilding output being produced at a facility with a large products list, distribution of the profit needed for plant cost-accounting activity by group should be done in proportion to the net cost of their production minus direct material expenditures.

Bringing the quantitative values of profitability normatives closer to net cost minus direct material expenditures on this basis will facilitate equalizing the operating conditions of cost-accounting enterprises, create conditions for effectively stimulating the production of high-quality, progressive equipment, and meet the tasks facing us at the present stage regarding strengthening the role of prices in perfecting the economic mechanism.

Another question requiring special study is the principles of intra-pricelist price differentiation. The tasks of differentiating price-list prices as a function of efficiency and quality have been resolved in the course of reviewing wholesale prices for many types of machinery and equipment. As a result of steps taken to strengthen the influence of wholesale prices on stimulating the release of more progressive new output, the relationship of new prices has changed in favor of new output mastered in 1979-1980. Under the prices previously in effect for output in production for more than five years, profitability was 16.4 percent of full net cost, but for output

¹"Instructions on Procedures for Establishing Incentives Surcharges for Wholesale Prices for New, Highly Efficient Production-Technical Output and Wholesale Price Discounts for Second Quality-Category Output, As Well As for Output Not Certified Within the Established Period," Moscow, 1979.

whose production was mastered in 1979-1980 -- 5.1 percent. Under the new wholesale prices, the relationship of these indicators is 8.2 and 10.3 percent, respectively.

At the same time, in connection with the technological nonhomogeneity of machinebuilding output, as well as the features of cost-accounting profit formation at enterprises of different departmental subordination which have been enlisted in producing machinery, there is no single approach to the question of the appropriateness of intra-pricelist differentiation of profitability normatives based on price-list subsections.

In the course of reviewing republic wholesale prices, we proceeded from a single normative of profitability in prices for machinebuilding output for each price list, but in a number of instances, exceptions had to be made to this rule. Thus, differentiated profitability normatives relative to net cost minus direct material expenditures were set for vehicle major overhaul for two groups of repairs: 29 percent for major overhauls on vehicles, units and subassemblies, and 36 percent for tire retreading. This had a positive impact on the effectiveness of using the new prices and has an appreciable influence on improving the cost-accounting operating conditions of the branches. Suffice it to say that, under the previously existing prices, about a third of the items included in this price list were loss or low-profitability items. Under the new prices, there are no loss items. In this regard, in view of the fact that the indicated groups of output are produced by various enterprises, there will be no differing profitability of items.

Particular attention has been paid to stimulating the release of scarce spare parts for machinery and equipment when improving these prices. Thus, whereas the profitability normative relative to net cost minus material expenditures was set at 27 percent for garage equipment as a whole, the figure for spare parts for this equipment is a third higher.

In the course of reviewing machinebuilding output wholesale prices, we also improved the price-list structure by setting straight the products list of items and by grouping technologically similar output into sections and subsections. However, there are still price lists which include wholesale prices for groups of items so diverse that the question of the appropriateness of intra-pricelist wholesale price differentiation demands special consideration. These are first of all wholesale prices for river and ocean ships produced by enterprises of the UkSSR Main Administration for the River Fleet. This price list includes wholesale prices for items which differ greatly in terms of designated purpose, complexity and cost: platform barges and buoys, tugboats and illuminators, gangways, and so forth. The net cost of these items differs a hundred-fold and the time involved in their manufacture -- several ten-fold. The task of ensuring that such items are equally advantageous to manufacture in terms of profit is therefore not exhausted by the establishment of a single profitability normative for the price list, but requires careful study of the features of economic circulation of each group of machinery and equipment and an evaluation of their influence on the cost-accounting conditions of enterprise operation.

In the course of preparing wholesale price lists for machinebuilding output to be instituted 1 January 1982, we developed net output normatives (NChP), by type of item, for the first time. The inclusion of this indicator in the system of price indicators of enterprise operation will exert a positive influence first of all on the dynamics of labor productivity and materials-intensiveness.

Experience in determining the indicator of NChP posed a number of questions requiring resolution. This applies foremost to methods of determining a consolidated wage indicator for industrial-production personnel engaged in production management and servicing; this is done by calculating a special coefficient, K_2 . In conformity with existing documents¹, this coefficient is defined as the relationship of the wages of industrial-production personnel of a production association (enterprise) who service and manage production to the wages of production workers.

At the same time, practice has shown substantial inaccuracies in calculations using coefficient K_2 obtained in this manner. Suffice it to say that, based on enterprise calculations, the NChP indicator exceeds the level of wholesale prices in a number of instances, which is unquestionably devoid of any sort of economic content. Thus, given a wholesale price of 3 rubles 67 kopecks for a hammer-hatchet produced by the Nikolayevskiy Plant imeni 61 Kommunar, the NChP indicator was calculated to be 8 rubles 60 kopecks.

Analysis has revealed that such disparities in calculations are most often discovered when determining NChP for items manufactured under single-item or small-series production conditions at large machinebuilding enterprises. The reason is that manufacturing output in small series is generally characterized by a higher proportion of labor expenditures in the net cost of machinery being produced in large series. Use of a single K_2 coefficient for the plant which reflects the specifics of the relationship of industrial servicing and management personnel wages in basic production to the wages of production workers therefore leads to unjustified overstatement of the NChP indicator. We need to differentiate the K_2 coefficient by basic plant output and machinery being manufactured in small series and single lots. In this instance, the K_2 coefficient must be reduced in proportion to the relationship of indirect expenditures for the enterprise as a whole and the corresponding expenditures of the shop producing the indicated items.

With the institution of NChP, which describes enterprise own expenditures on manufacturing output, into economic practice, the importance of the indicator of labor expenditures increases substantially. In connection with the fact that wage expenditures average one-fifth of machinebuilding output net cost and the fact that they comprise a higher proportion in the NChP structure, much attention has been paid, in improving prices, to working out this indicator, both on the part of industry workers and on the part of price-formation agencies.

The importance of a substantiated determination of wage expenditures when shaping the level of net cost is also great because, under the method now adopted, distribution of indirect expenses and expenses on operating equipment and social insurance is done basically in proportion to wages. Practice shows that these expenditure items average 35-50 percent of the net cost of many machines. Therefore, even a slight error in substantiating labor expenditures turns out to have a substantial influence on the value of item net cost as a whole and can be negatively reflected both in the level of profitability and prices and in the shaping of a substantiated NChP indicator.

When shaping prices, we need to be oriented towards a branch-average level of expenditures whose determination based on machinebuilding output in the republic products

¹"Methods Instructions on Procedures for Developing and Using the Indicator of (Normative) Net Output in Planning," Moscow, 1979.

list is in a number of instances made difficult by the considerable differentiation of expenditures at enterprises of different departmental subordination and, in a number of instances, results from the fact that items are produced only at one enterprise and its individual expenditures are adopted as the basis for the price. Bringing expenditures for machinery in the republic products list closer to the estimated branch-average level in the absence of a single branch is also made difficult by weakness in the interdepartmental normative base.

In order to improve the substantiation of the price calculation base, we need two groups of normatives. The economic purpose of the one group of normatives reduces, for price-formation purposes, directly to a reflection of the branch-average level of expenditures. The other group of normatives must define in a consolidated manner the upper boundary of expenditures and be in the form of interplant control normatives. The creation of labor expenditures control normatives is especially important.

In price formation, it is appropriate to use a system of cost normatives, with top priority being given to the specific expenditure of basic and supplemental wages for production workers per ruble of processed raw material value, to monitor the substantiation of relating labor expenditures to type of machine, given a large products list of single-item and small-series production. The possibility of developing such consolidated cost normatives results from the presence in the branches of indicators which describe in a consolidated manner the complexity of working an item (average job rate category), worker skill (average worker rate category), as well as from the proximity of the structure of the materials being worked, by type of technically similar machines.

The UkrNIItsen is currently attempting to determine a consolidated control normative of specific wage expenditures for agricultural machinery manufacturing. The work is based on a study of specific labor expenditures which have evolved in the production of agricultural machinery and subassemblies being released by 175 Ukrainian plants, as well as analogous indicators for 259 types of agricultural machinery being series-produced at specialized plants of the USSR Ministry of Tractor and Agricultural Machinebuilding.

The construction of variant series of specific wage expenditure indicator distribution has enabled us to determine the scope of the variation, to develop interval variation series, and set up distribution histograms and ogives which describe graphically the essence and quantitative values of the indicator by machine group.

Using the interval variation series obtained, we made a graphic analysis of the distribution of specific wage expenditure indicator values (setting up distribution histograms and ogives) for 196 agricultural machinery subassemblies being manufactured on a broad cooperative basis in the republic. The values of the indicator being analyzed, which delimit the zone of maximum distribution density, are recommended as the control values.

Use of the indicated control normatives in shaping prices for machinery and equipment being manufactured in small series will ensure disclosure of deviations in individual expenditures from the average level, will reduce the possibility that labor expenditures would be overstated and will facilitate improving substantiation of the indicator of normative net output.

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METALWORKING EQUIPMENT

NEW ROBOTICS WELDING COMPLEX

Leningrad LENINGRADSKAYA PRAVDA in Russian 24 Jan 82 p 1

[Article by V. Kovshanets: "Effect of Cooperation"]

[Text] "Our sincere thanks go to the Leningrad party organization for its attention and help given in creating a system to control an arc welding robot. Due to this system manufactured at the 'Leningrad Elektromekhanicheskiy Plant,' Association, experimental operation of the first domestic robot complex for arc welding has begun." Signed by academician B. Ye. Paton, director of the Electric Welding Institute imeni Ye. O. Paton.

Such a telegram was sent recently from Kiev to the CPSU obkom. Several laconic lines, but behind them stand years of intensive joint labor and the ceaseless creative pursuit of Ukrainian and Leningrad specialists in furthering the acceleration of the rates of technical progress in the country.

Here is what our correspondent V. Kovshanets was told by participants in the creation of the special design complex.

G. A. Spynu, doctor of technical sciences, manager of the welding processes program control department of the Electric Welding Institute imeni Ye. O. Paton and the scientific leader of the theme stated the following:

"New technical robot complexes whose industrial operation must begin by next year will find their widest application in motor vehicle building, tractor building and other enterprises in the country. By automating the arc welding process, they will facilitate the further increase in the efficiency and quality of this work and free hundreds of production workers from doing difficult manual operations. It is estimated that the annual effect of each such installation will be 25,000 to 30,000 rubles."

As an actuator of the complex, we decided to use the series manufactured "Universal" robot created previously in our institute which acquitted itself well in industry. A new set of welding equipment was designed for it. However, it required a special device capable not only of controlling its actions according to a given program, but also of teaching the manipulator, to some extent, by these actions.

"Such a contour system for controlling robots was designed and built in the 'Leningrad Electromechanical Plant' Association."

"The first tests and the experimental operation of the complex, created as a result of our cooperation indicated that they are not inferior to similar arc welding installations abroad in their technical economic characteristics."

"It is especially pleasant that this work, so important to the national economy, was implemented in the course of the widely developed preparation for the 60th anniversary of the formation of the USSR, as well as on the eve of the 1500th anniversary of Kiev, which has long, all-around and fruitful ties to Leningrad."

V. A. Chiganov, manager of the industrial robot department of the "Leningrad Electromechanical Plant" Association, had the following to say.

"The device which we have developed controls the welding process along a complex curvilinear trajectory, for example, along the body of the motor vehicle. Moreover, this self-learning system is capable of repeating any operations 'shown' it by a worker, which expands the application range of the welding complex considerably."

"All of this required us to solve a number of complicated theoretical and practical problems which were executed in close creative cooperation with the Institute imeni Ye. O. Paton specialists, as well as the staff workers of the Moscow Institute of Applied Mathematics imeni M. V. Keldysh USSR Academy of Sciences and the Leningrad Scientific Research Computer Center, that made all the necessary mathematical calculations."

"Later, at the control system manufacturing stage in this cooperation, due greatly to the highly effective and constant help and attention of the CPSU obkom, production shop workers actively participated in this work. As a result, the first prototypes of the control devices with microcomputers were assembled, regulated and shipped to buyers on a tight schedule in December of last year."

"By the way, due to a considerable extent to this cooperation, we developed and created in parallel a complex robot control system for applying paints and varnishes which we think will also find wide application in industry."

V. N. Kochkarev, brigade foreman of shop No 15 adjusters of the association, said:

"The work of creating a contour device for robot control brought great, professional joy to all members of our brigade although it demanded great effort from each of us. In fact, any operation for finishing off the system had to be executed with extreme thoroughness and, I would even say, with virtuosity."

"Here again we convinced ourselves of the advantages of working on one production order, and wage distribution according to the labor participation coefficient, because of which the brigade acted as a coordinated collective where it was one for all and all for one. The efforts and attention of each one were concentrated only on the work and the desire for the more precise incorporation in practice of the concepts of scientists and designers."

"It was also of great help to us that all previous operations in the assembly of the system were done irreproachably by the mechanics and assemblers brigade of V. N. Ivanov and other collectives."

"In the first quarter of this year, our shop wil manufacture two more such contour devices and not less than 10 of them will be assembled during the year. In honor of the 60th anniversary of the formation of the USSR, production workers of the shop and the enterprise have obligated themselves to produce these complicated systems strictly according to schedule and of excellent quality and will do everything to keep their word with honor."

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METALWORKING EQUIPMENT

ROBOTS IN PLATING FACILITY

Minsk SOVETSKAYA BELORUSSIYA in Russian 17 Feb 82 p 2

[Article: "Without Human Participation"]

[Text] Plating shop workers of the Minsk "Promsvyaz'" Plant have acquired absolutely undemanding helpers. A new production building was released for operation where all operations related to corrosive media will be done by machines.

An automated line was started here which is serviced by robot-manipulators capable of tirelessly "bathing" parts in electrolytes and acids. Two more such complexes are being prepared for start-up. They also plate chromium, nickel and other metals without human participation, except that workers will do the monitoring and provide the robots with initial parts.

"This is only the start of the radical renovation of the capacities in the 11th Five-Year Plan period," said G. Ye. Flezavin, chief engineer of the plant. "Our problem is to increase the volume of production by over one- and-a-half times without increasing the number of workers. We also intend to transfer harmful, laborious and monotonous processes to automatic machinery. It is precisely for this reason that we have begun with sections where specific labor conditions are the most unfavorable. Much has already been done. In parallel with the start of the plating shop, a large building for cleaning parts was released for operation. All processes in this building are also automated. As a whole, the air in the plant is cleaner. A technology for not wasting water in plating products was introduced with the help of scientists.

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METALWORKING EQUIPMENT

BRIEFS

ROBOTS -- A turning complex "machine tool-automatic manipulator" is the creation of the Ryazan' Machine Tool Building SKB [Special design bureau]. It is designed to machine disc and ring type parts. The complex consists of a semiautomatic turning lathe with numerical programmed control and a manipulator. The industrial robot is periodically loaded and unloaded with intermediate products weighing up to eighty kilograms. The use of the complex increases the productivity of labor considerably due to the increase in the cutting speed and the reduction in the time spent on auxiliary operations. The annual economic effect in using one such complex is 23,000 rubles. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 1, Jan 82 (signed to press 28 Dec 81) p 16] 2291.

ROBOT STAMPING COMPLEX -- A stamping complex which was designed in the Leningrad All-Union Electrical Equipment Design Technological Institute is capable of making up to 600 parts per hour (weighing up to five kilograms each). It operates like an industrial robot. Its manipulator is equipped with two "arms" that transfer intermediate products from a rotating table to a hydraulic press and remove finished parts. This complex makes it possible to automate very laborious technological stamping operations which were previously done manually. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 3, Jan 82 p 14] 2291.

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